

# World Premier International Research Center Initiative (WPI)

## FY2014 WPI Project Progress Report (Post-Interim Evaluation)

Host Institution	The University of Tokyo	Host Institution Head	Junichi Hamada
Research Center	Kavli Institute for the Physics and Mathematics of the Universe	Center Director	Hitoshi Murayama

**Common instructions:**

- \* Unless otherwise specified, prepare this report from the timeline of 31 March 2015.
- \* So as to base this fiscal year's follow-up review on the document "Post-interim evaluation revised center project," please prepare this report from the perspective of the revised project.
- \* Use yen (¥) when writing monetary amounts in the report. If an exchange rate is used to calculate the yen amount, give the rate.

### Summary of State of WPI Center Project Progress (write within two pages)

The Kavli IPMU was founded from scratch as a unique interdisciplinary institute in the world combining mathematics, theoretical and experimental physics, and astronomy. It has grown to an international research center of about 230 research members.

**Scientific research progress**

In the calendar year (CY) 2014, 314 (452 when including WPI-related) papers were published, with a steady increase over the past years (75, 199, 240, 292, 347, 380 from CY2008 to CY2013 including WPI-related papers). Among the WPI papers published in CY2014, the rate of highly cited papers "top 1% of papers" is 19 (6.1%) based on the Web of Science by Thomson Reuters. The impact factor for all of our refereed papers published from the inception to Dec 2014 is the following: the average number of citations per paper is 17.1; 38 papers have over 100 citations and 133 over 50 citations in which review papers are excluded. The Kavli IPMU members also received 11 valuable prizes or awards during FY2014. The highlights in our scientific results are summarized below.

- The XMASS collaboration led by Y. Suzuki provided the most stringent direct constraint on bosonic superweakly interacting massive particles (Super-WIMPs) and ruled out the possibility that Super-WIMPs constitute all dark matter in the universe. Their result was published in Physical Review Letters as an Editor's Suggestion.
- The T2K collaboration took the first data with the beam in the antineutrino-enhanced mode to directly search for CP violation through the differences between neutrino and antineutrino oscillations. Our members T. Nakaya and M. Shiozawa lead the T2K experiment and were awarded the Yoji Totsuka prize for the discovery of the final piece of neutrino oscillation from muon neutrinos to electron neutrinos.
- The KamLAND-Zen experiment led by K. Inoue and A. Kozlov searches for neutrinoless double beta decay in Xenon 136 to provide the world best limit for the effective Majorana neutrino mass. The team succeeded in reducing Ag-110m background and reported the improved upper limit for the effective mass of 140meV to 280meV in Neutrino 2014 conference.
- The EGADS project led by M. Vagins finished the R&D test for studying the effect of dissolving gadolinium salts in a water Cherenkov detector, and steadily progressed toward supernova detection goals. After refurbishing EGADS filtering system, the team has achieved – with dissolved gadolinium – water transparency equivalent to the ultrapure water in SuperKamiokande. This is a major breakthrough to achieve the highest possible efficiency for detecting supernova neutrinos.
- The Kavli IPMU team headed by T. Higuchi is taking initiative of constructing the silicon vertex detector (SVD), which are core parts of the Belle II detector. The SVD assembly techniques carefully developed in the clean room located in the Kavli IPMU building to realize the super-precision vertex detection are so well established that it is referred to as the standard by other institutes.
- The POLARBEAR experiment of which N. Katayama, M. Hazumi and H. Nishino are members has detected CMB B-mode polarization generated from the gravitational lensing effect of large-scale structure. This is a first significant detection of cosmological B-mode signature and a big step for the LiteBIRD experiment, which aims for detecting primordial gravitational wave imprinted on the CMB B-mode polarization. LiteBIRD was selected on "Master Plan 2014" by Science Council of Japan and on one of ten new projects in the roadmap of large research projects 2014 by MEXT.

- H. Murayama, M. Takada, and N. Tamura lead the SuMIRe project, galaxy imaging and spectroscopic survey using a wide-field imaging camera "Hyper-Suprime Cam" (HSC) and multi-object spectrograph "Prime Focus Spectrograph" (PFS) for the Subaru telescope, to aim for uncovering the origin and future of the universe. The imaging survey using HSC has started and the HSC team is working on the science operation using the first year data.
- Astronomers in the Kavli IPMU made a number of important discoveries. The group led by R. Quimby and M. Oguri first discovered the gravitational lens magnifying Type Ia supernova and their work was published in Science. The team led by M. Ishigaki and K. Nomoto obtained a clue on the mass of first stars in the Universe by analyzing the spectrum of the most iron-poor star recently discovered. The group led by G. Folatelli and M. Bersten found evidence of a hot binary companion star predicted in their new theoretical picture of supernovae.
- Pure gravity mediation (PGM) model developed by the group of T. Yanagida and S. Matsumoto has been widely known to be a successful model for physics beyond the standard model. They showed that both the cosmic-ray electron positron anomaly and the excess of antiproton to proton ratio reported by the AMS-02 group can be explained as the decay of wino dark matter predicted in the models.
- Theoretical physicists in the Kavli IPMU are playing dominant roles in developing methods to exactly compute important observables in supersymmetric gauge theories. K. Hori's group obtained exact formula for supersymmetric partition functions in 1D and 2D theories, which are important for string theory as well as quantum field theory.
- Mathematicians in the Kavli IPMU actively work on a variety of subjects in arithmetic, algebraic complex and symplectic geometry and representation theory with deep connections with theoretical physics in particular with the string theory. Y. Toda has been honorably invited to speak in the International Congress of Mathematicians held once every four years. He was also awarded the 11th JSPS prize.

### **Interdisciplinary studies**

During FY2014, we totally held 233 seminars including interdisciplinary seminars of 79 mass-string (MS) seminars and 91 Astronomy-Cosmology-Particle physics (ACP) (Astronomy-Particle physics-Experimental physics-Cosmology (APEC) seminars after October 2014) in total. We have started a new JST CREST program for the innovation of "statistical astrophysics" in collaboration with the Institute of Statistical Mathematics, U. Tsukuba and NTT communications. The new research project provides the fusion studies between astronomy, statistics, and mathematics. H. Murayama published several papers jointly with a condensed matter physicist. H. Ooguri, in collaboration with a mathematician, made significant progress in understanding how holographic spacetime emerges from information theoretic data on the boundary. Their paper was selected as Editor's suggestion in Physical Review Letters.

### **Globalization**

The ratio of non-Japanese members among all of researchers is 41% at the end of FY2014. We succeeded in attracting Prof. Mikhail Kapranov from Yale as our new faculty member. We also held 13 conference/workshops inside the Kavli IPMU. We have 928 (1689) visitors (the numbers in the parentheses take into account multiple visits). Among them, 471 (549) are international. We obtained 766 applicants for our postdoctoral positions and 92% of them are from outside Japan. So far the Kavli IPMU signed 16 cooperative research agreements or memorandum of understanding (MOU), and student exchange is increasing. We obtain the new external funding from JSPS for the program for advancing strategic international networks to accelerate the circulation of talented researchers.

### **Organization Reform**

We achieved the first internal cross appointment for Prof. N. Yoshida between the Faculty of Science in UTokyo (60%) and the Kavli IPMU (40%) under a clear job effort contract. We attracted M. Hazumi in the faculty of the Kavli IPMU as a joint appointment with KEK. UTokyo promises to support the Kavli IPMU in a permanent basis. TODIAS funded ¥200M per year from this year and have given 4 tenure posts. Kavli foundation also raised the endowment from ¥900M to ¥1500M (the exchange rate US \$1=JPY ¥120 is used).

### **Others**

H. Murayama delivered a speech titled "Science for peace and development today and tomorrow" at United Nations (UN) Headquarters on the occasion of CERN's 60th anniversary. His spirit of founding the Kavli IPMU was broadcast on UN web TV. The Kavli IPMU and Hamamatsu Photonics K.K. established the Endowed Research Unit. K. Nomoto received the title of Hamamatsu professor. Scientific works done by the Kavli IPMU members were covered by media 366 times. As trans-disciplinary activities, we held public speech events between our theoretical physicist with a painter and a photographer for exchanging their views. H. Ooguri was awarded Kodansha Prize for Science Books for his popular science book.

- Please concisely describe the progress being made by the WPI center project from the viewpoints described below.
- In addressing the below-listed 1-6 criteria, please place emphasis on the following:
  - (1) Whether research is being carried out at a top world-level (including whether research advances are being made by fusing fields).
  - (2) Whether a proactive effort continues to be made to establish itself as a “truly” world premier international research center.
  - (3) Whether a steadfast effort is being made to secure the center’s future development over the mid- to long term.
- Please prepare this report within 10 pages (excluding the appendices, and including Summary of State of WPI Center Project Progress (within two pages)).

## 1. Conducting research of the highest world level

- \* Regarding the criteria used when evaluating the world level of center, please note any updated results using your previous evaluation criteria and methods or any improvements you have made to those criteria and methods.

The Kavli IPMU covers a broad range of fields to uncover the dark components in the universe. The institute covers experimental physics including accelerators, underground, and astronomy, and theoretical research of particle physics, astronomy, string theory, and mathematics. Our faculty members play leading roles in various projects and fields. Below are brief summaries of the main results.

### **Experimental physics**

XMASS: The XMASS collaboration has completed the refurbishment work to reduce the unexpected background found during its commissioning. They have achieved about one order of magnitude reduction of the background in a few keV region. XMASS started to take data on December 2013 and more than one year of data was accumulated. The group is currently studying the seasonal modulation of light WIMPs and the results will appear shortly. XMASS group has obtained a stringent limit on the bosonic super-WIMPs that are interesting because the problem of the unwanted small galactic scale clumps seen in a simulation of a development of the large-scale structure based on the cold dark matter scenario may be softened. The paper “Search for Bosonic Superweakly Interacting Massive Dark Matter Particles with the XMASS-I Detector” is selected as the Editors’ Suggestion of Physical Review Letters. The obtained limit surpasses the existing astrophysical constraints, entering new territory. XMASS collaborators are currently designing XMASS1.5, with 1 ton fiducial mass and sensitivity below  $10^{-46}\text{cm}^2$  for WIMP nucleon spin-independent cross sections.

T2K: The T2K collaboration published the joint fit to the muon neutrino and electron neutrino candidates with neutrino data collected through 2013. Through the combination with reactor neutrino measurements, this result gives an exciting indication of CP violation in the lepton sector. It also provides the world's best measurements of the atmospheric mixing parameters and muon neutrino to electron neutrino oscillations. T2K also published a number of new neutrino interaction and short baseline measurements using data from its near detectors and Super-Kamiokande in FY2014. Perhaps the most exciting development of FY2014 was the first data taken by T2K with the beam operating in antineutrino-enhanced mode. This data will allow T2K to directly search for CP violation by comparing the rate of electron neutrino appearance to electron antineutrino appearance. The first measurements using this antineutrino-enhanced data are in progress and will be shown in FY2015. The Kavli IPMU members including H. Sobel and M. Hartz played leading roles in the T2K experiment. T. Nakaya and M. Shiozawa were awarded the 6th Yoji Totsuka prize for their contribution to the discovery of the third neutrino oscillation mode from muon neutrinos to electron neutrinos.

KamLAND-Zen: Neutrinoless double beta decay is one of the clues to solve the mystery: why is our universe made of matter? Or why does almost no antimatter exist in our universe? KamLAND-Zen is an experiment to search for neutrinoless double beta decay in Xenon 136 and its detector is located 1000 m underground in the Kamioka mine. The international team led by K. Inoue (PI of the Kavli IPMU and also Director of the Research Center for Neutrino Science, Tohoku University) including A. Kozlov has reported the world best limit for the effective Majorana neutrino mass. The team has further succeeded in reducing the dominant background coming from Ag-110m by more than factor 10. And an improved upper limit for the effective mass of 140 meV to 280 meV has been presented in the Neutrino 2014 conference. The expected sensitivity after the stable data acquisition throughout the FY2014 should go below 100 meV.

EGADS: M. Vagins leads the project called EGADS (Evaluating Gadolinium’s Action on Detector System) for studying the effects of dissolving gadolinium (Gd) salts in a water Cherenkov detector. R&D phase of the

project is just about to be finished, and EGADS is being converted into the world's most advanced supernova neutrino detector. After refurbishing EGADS detector and upgrading the water filtration system, the team has for the first time anywhere achieved – *with* dissolved gadolinium – salted water transparency equivalent to the ultrapure water in Super-Kamiokande (SK). This is a major breakthrough, and will allow the highest possible efficiency for detection of supernova neutrinos. Indeed, EGADS now stands for Employing Gadolinium to Autonomously Detect Supernovas. No one expected that Gd-loaded water (there are 400 kg of gadolinium sulfate dissolved in the 200-ton EGADS tank) would ever be as transparent as SK's ultrapure water. This has powerful implications for this new Gd-loading technology, since extremely clear water is key to the success of all large water Cherenkov detectors. The team plans to upgrade the front-end electronics and install a specialized computer to receive and analyze realtime data toward the ultimate goal to alert the world that a supernova explosion is taking place anywhere in our galaxy within one second of the first neutrino's arrival in EGADS. The team is moving forward to add gadolinium to Super-Kamiokande, a project known as GADZOOKS! (Gadolinium Antineutrino Detector Zealously Outperforming Old Kamiokande).

Belle II: The Kavli IPMU joined an accelerator-based particle physics experiment, Belle II at KEK, in 2012. Several experimental observations in particle physics and astrophysics had given implications of a new physics beyond the Standard Model of the particle physics. In Belle, the preceding experiment of the Belle II, deviations in the observables from the Standard Model predictions had been indicated especially in the B-meson decays mediated by the Flavor Changing Neutral Current, in which a much heavier particle belonging to new physics can show up virtually. The Kavli IPMU team headed by T. Higuchi has increased their contribution to the international collaboration of the Silicon Vertex Detector (SVD) of Belle II, which will be used to locate the decay vertex of the B-mesons with the precision of  $\sim 100 \mu\text{m}$ . The team has succeeded to establish a reference procedure by the collaboration of the precision detector assembly that places silicon sensors with position distortion within  $\sim 200 \mu\text{m}$  in a 700mm long detector. The team has also succeeded to assemble a detector comprised of an electrically functional sensor first time in the collaboration, and had developed our knowledge of the electrical detector response to particles through beta ray studies. In addition to the detector assembly works, the team takes responsibility to serve a driving force of the SVD construction, installation, and operation together with software development in order to contribute to the successful start of the Belle II data taking anticipated in 2018.

POLARBEAR, LiteBIRD: The Kavli IPMU joined POLARBEAR experiment for measuring the polarization of cosmic microwave background in 2013. M. Hazumi (a joint professor of KEK and the Kavli IPMU) and N. Katayama play a leading role in the experiment. The group first succeeded to measure CMB B-mode polarization induced by the large-scale structure in the universe at  $4.7\sigma$  significance. The new receiver POLARBEAR-2 will be mounted in early 2015. M. Hazumi, N. Katayama, E. Komatsu, H. Sugai also lead the satellite mission LiteBIRD to be launched in 2022. The aim is detecting inflationary gravitational wave B-mode to test the era before the big bang. LiteBIRD was selected as one of big academic research project "Master plan 2014" by Science Council of Japan and also as one of ten new projects in the roadmap of large research projects 2014 by MEXT. The mission design review and the system specification review will be done in the 2015.

SuMIRe (HSC&PFS): SuMIRe (Subaru Measurement of Image and Redshifts) is a large-scale international survey project aiming at uncovering the origin and future of the universe. This project is led by H. Murayama as a core researcher (PI), the science group leader M. Takada, and the project manager N. Tamura, both at the Kavli IPMU, involving both physicists and astronomers from the Academia Sinica Institute for Astronomy and Astrophysics (ASIAA, Taiwan), Jet Propulsion Laboratory of NASA, California Institute for Technology, Princeton University, Johns Hopkins University, Laboratoire d'Astrophysique Marseille, Universidad São Paulo, the Laboratório Nacional de Astrofísica (LNA, Brazil), and the Max Planck Institute for Astrophysics. A wide-field imaging camera Hyper Suprime-Cam (HSC), a new 900M-pixel digital camera for Subaru Telescope, is one of the two subprojects of SuMIRe. The HSC team started the science operation in March 2014, taking 300 nights of Subaru telescope for 5 years until 2019, which is the largest ever survey program for the Japanese community. The science team is now reducing the first-year HSC data and assessing the quality of the data, confirming that the data achieves an exquisite image quality. The team is now working very hard to carry out the early-year science with the HSC data. Another subproject of SuMIRe is the multi-object spectrograph, Prime Focus Spectrograph (PFS), aimed at making the spectroscopic follow-up of HSC images. The PFS started manufacturing of its subcomponents, and aims at starting the science operation in 2019, spending another 300 nights of Subaru Telescope. The combination of HSC and PFS is unique and will enable us to examine the nature of dark matter and dark energy, the evolution and origin of galaxies and the assembly history of the Milky Way and Andromeda Galaxy.

SDSS: The 3rd phase of Sloan Digital Sky Survey (SDSS) finished and the Data Release 12 became public. Baryon Oscillation Spectroscopic Survey (BOSS) group including our members place stringent upper limits

on the neutrino mass and cosmic growth rate. A theoretical paper by S. Saito titled "Understanding higher-order nonlocal halo bias at large scales by combining power spectrum with the bispectrum" aiming to decode the gravitational evolution of dark matter halos is selected as Editors' Suggestion of Physical Review D. The 4th phase of SDSS started in July 2014. The Kavli IPMU has full access rights to the data. K. Bundy is the PI of Mapping Nearby Galaxies at APO (MaNGA) project, which is one of the core programs in SDSS IV and the members consist of 300 researchers from 60 countries. They study the internal kinematic structure and composition of gas and stars by observing 10000 nearby galaxies in 6 year to understand the life cycle of present day galaxies. MaNGA survey has started from July 2014 and spectroscopy of 720 galaxies has been obtained and five papers have already been submitted (all of the papers have been already published in Astrophysical Journal, Astronomical Journal or Monthly Notices of Royal Astronomical Society). They are preparing for the analysis product including star formation and ionization rate, which can be widely used in the astronomy community.

## **Theoretical Physics**

Astronomy: Astronomers in the Kavli IPMU made discoveries of several important astrophysical events. The group led by R. Quimby and M. Oguri discovered the gravitational lens magnifying a Type Ia supernova for the first time. The paper has been published in Science and covered by more than 80 media worldwide. The team led by M. Ishigaki and K. Nomoto found that the elemental abundance of the most iron-poor star can be explained by elements ejected from supernova explosions of the universe's first stars with 25-40 solar mass. This work is important to shed light on the nature of the first stars in our universe. Their work was published in Astrophysical Journal Letter. The group led by G. Folatelli, M. Bersten and K. Nomoto found evidence of a hot binary companion star besides a yellow supernova 2011dh. The existence of the companion star was predicted by the group and supports their theoretical picture of supernova. The results are published in Astrophysical Journal Letters and the press conference was held at Sep 11 in 2014. There are also other two papers published in Science, "Large impacts around a solar-analog star in the era of terrestrial planet formation" by H. Meng et al. (W. Rujopakarn), and "A chemical signature of first-generation very massive stars" by W. Aoki, N. Tominaga et al.

Particle phenomenology: Phenomenological aspects of the pure gravity mediation (PGM) model have been much developed this year by T. Yanagida, S. Matsumoto and M. Ibe together with postdoctoral researchers and students at the Kavli IPMU. The PGM model has been proposed and developed in various studies in this institute and now widely known to be one of the most attractive and successful models for physics beyond the standard model. It has been clarified by the Kavli IPMU researchers that cosmic-ray electron and positron anomalies reported by the Alpha Magnetic Spectrometer (AMS-02) collaboration could originate from the decay of the wino dark matter within the PGM model (published in Physics Letter B). Very recently, the AMS-02 collaboration has also reported the antiproton to proton ratio, and the data shows a tendency toward the excess requiring a primary injection of antiprotons. The Kavli IPMU researchers have shown that the tendency is very consistent with the annihilation of the wino dark matter (published in Physical Review D). If this excess is confirmed with more data, the PGM model could be accepted as the true physics theory beyond the standard model. Another way to test the PGM model is the indirect detection of the wino dark matter by observing gamma rays from dwarf spheroidal galaxies (dSphs). The Kavli IPMU researchers have shown that the wino dark matter could be definitely detected if the dark matter distribution in each dSph is accurately determined. The work was published in Journal of High Energy Physics (JHEP). This study is now being developed to an interdisciplinary study with several astrophysicists of the Kavli IPMU toward the accurate determination of the dark matter distribution.

String Theory: Theoretical physicists in the Kavli IPMU are playing dominant roles in developing methods to compute important observables in supersymmetric gauge theories exactly. K. Hori and collaborators obtained an exact formula for supersymmetric partition functions in theories in one and two dimensions. Apart from the importance in quantum field theory, the results are also relevant for string theory, since two-dimensional theories can be used to study the dynamics of string worldsheets while one-dimensional theories appear as effective description of BPS particles. With Francesco Benini, members of the Kavli IPMU (R. Eager, Y. Tachikawa and K. Hori) obtained an exact formula for the elliptic genus of two-dimensional gauge theories. This work started when Benini visited the Kavli IPMU and the full version is published in Communications in Mathematical Physics in February 2015. It already has numerous applications in string theory and M theory, such as test of duality and enhanced symmetry. K. Hori extended this work to computation of Witten index in a general gauged quantum mechanics (published in JHEP in January 2015), with visitors to the Kavli IPMU (H. Kim and P. Yi). They obtained a general formula for the index at each chamber in the space of Fayet-Iliopoulos parameter, and clarified the physics of the change of the index as the parameter goes across walls between chambers. This work is important to understand the degeneracy of BPS states in four-dimensional theories, and is expected to have application in black hole microstate counting.

## Mathematics

Mathematics of the Kavli IPMU covers various active subjects in arithmetic, algebraic, complex and symplectic geometry and representation theory with deep connections with theoretical physics in particular with the string theory. The works done by the Kavli IPMU members in 2014 are listed in the following.

M. Kapranov (with M. Kontsevich and Y. Soibelman) established a relationship between the “algebra of infrared” approach to Landau-Ginzburg models and the secondary polytopes introduced much earlier by himself, I. Gelfand and A. Zelevinsky (arXiv:1408.2673). M. Kapranov further (with V. Schechtman) proposed a categorification of the concepts of perverse sheaves (arXiv:1403.5800, arXiv:1411.2772). M. Kapranov (with S. Pimenov) introduced and studied derived varieties of complexes, objects of derived algebraic geometry that can be used as building blocks for constructing various moduli spaces, and established the fact that these varieties are “spherical” (arXiv:1504.00339).

Y. Toda showed that the moduli stacks of Bridgeland semistable objects on smooth projective 3-folds are proper algebraic stacks of finite type, if they satisfy the Bogomolov-Gieseker inequality conjecture proposed by A. Bayer, E. Macri and himself about four years ago. This result is applied to define Donaldson-Thomas invariants counting Bridgeland semistable objects on smooth projective Calabi-Yau 3-folds satisfying the BG inequality conjecture, for example on étale quotients of abelian 3-folds (joint work with D. Piyaratne, arXiv:1504.01177).

A. Bondal (with A. Zhdanovskiy) proved that the variety of mutually unbiased pairs of bases is given by critical points of a potential with explicit formula and has a relation to Landau-Ginzburg potentials related to Fano varieties. A. Bondal (with A. Bodzenta) gave an explicit description of the derived null category for a birational morphism of smooth surfaces by means of discrepancy sheaves. A. Bondal (with A. Rosly) proved that the derived category of sheaves of modules with coherent cohomology on a generic three-dimensional complex torus is not equivalent to the derived category of coherent sheaves. They further proved that the homotopy category of dbar-superconnections on a non-compact smooth complex-analytic manifold is equivalent to the derived category of bounded restricted complexes of modules with coherent cohomology (application to Chern classes) (these works in progress).

T. Abe tried to formulate differential geometric interpretation of Bayer-Macri-Toda's conjecture, which should be regarded as a generalization of Uhlenbeck-Yau's result, where it is well-known that Bogomolov-Gieseker type inequality is a consequence of Uhlenbeck-Yau's existence theorem of Hermitian-Einstein metric. T. Abe obtained a reasonable candidate for rank 1 vector bundle, but more general situation is yet to be investigated (these works in progress).

K. Saito has shown that the skew-growth function for the monoid of square matrices with coefficients in a principal ideal domain has the Euler product expansion (published in Journal of Algebra). Based on the description of primitive forms for weighted homogeneous singularities, K. Saito (with S. Li, C. Li and Y. Schen) worked out on the LG-FJRW mirror symmetry for the 14 unimodular exceptional singularities (arXiv:1405.4530, accepted for publication in Journal of the European Mathematical Society and also published in RIMS-Kokyuroku 1918 (2014) pp.59-70). K. Saito is establishing the analytic framework of primitive forms for multiple critical points case, and has shown the coherence of the direct image of relative de-Rham complex under a topological assumption, where he introduced a new concept Koszul de-Rham algebra, generalizing the concept of Koszul resolution (arXiv:1502.04872).

T. Milanov has 3 results in his general goal to understand Gromov-Witten invariants via the representation theory of vertex algebras. First, in 2014 in a joint paper with H.-H. Tseng and Y. Shen, he managed to express the vertex operators in his construction in terms of Iritani's integral structure (arXiv:1401.5778, submitted to Geometry and Topology). In 2015, he managed to establish a very difficult technical result about the phase factors of the product of two vertex operators (arXiv:1502.07444, submitted to the Proceeding of the workshop “Primitive Forms and Related Subjects”, Kavli IPMU, Feb. 2014). Finally, he proved the existence of a global spectral curve for the Eynard-Orantin recursion of an ADE singularity (arXiv:1501.03677, submitted to Communications in number theory and physics). In particular, he managed to express the phase factors in terms of the so-called Bergmann kernel of the spectral curve. This result suggests that his approach to Gromov—Witten theory via vertex algebras is part of a more general framework of conformal field theories (with central charge 1).

The paper by T. Kobayashi “Minimal representations via Bessel operators” was awarded the 2015 Journal of the Mathematical Society of Japan (JMSJ) outstanding paper prize. K. Saito and T. Kohno held a workshop “Towards Quantum Primitive Form Theory” as a joint program of the Kavli IPMU and the Frontiers of Mathematical Sciences and Physics (FMSP) program. The workshop covers recent developments related to period maps for primitive forms, which lead to understanding of the quantization of primitive forms.

## 2. Advancing fusion of various research fields

We hold tea time “daily” as the only duty for the members of the Institute. The teatime provides a great opportunity for researchers from different fields to talk with each other in a relaxed mood and to come up with new ideas. One of the successful examples is the work of the magnification of a supernova by gravitational lensing, the idea of which was born from the teatime discussion by the astronomer R. Quimby, the mathematician M. Werner, and the physicist M. Oguri.

The Kavli IPMU has started a new CREST project funded by Japan Science and Technology Agency (JST) in collaboration with the Institute of Statistical Mathematics (ISM), U. Tsukuba, and NTT communications. In coming 5 years, a large data amounting 25 trillion pixel data from Subaru telescope is anticipated in the Hyper Suprime-Cam projects, which aim for mapping the dark matter distribution in the universe. We explore the new frontier of astrostatistics combining statistics with astrophysics to analyze the big data. The new research project will provide new synergies between statistics, astronomy, and mathematics.

H. Murayama collaborated with a condensed matter physicist, H. Watanabe, to show that the momentum operators do not commute for certain topological solitons in quantum field theories without external fields, which means that one cannot specify their momentum. Their paper was published in Physical Review Letters. Quantum entanglement has emerged as an important concept both in quantum gravity and in condensed matter physics. H. Ooguri, in collaboration with a mathematician, M. Marcolli, and graduate students, J. Lin and B. Stoica, published a paper entitled “Tomography from Entanglement”, in which they made significant progress in understanding how holographic spacetime emerges from information-theoretic data on the boundary. In particular, they discovered a formula to express the local energy density in the gravitational theory using quantum entanglement data in the boundary theory. Their paper has been accepted for publication in Physical Review Letters with distinction as Editor's Suggestion. In another project with information theorists, H. Ooguri has discovered a complete set of entanglement inequalities that characterizes quantum field theories with semi-classical gravitational duals with smooth geometry. Their paper on holographic information inequalities will appear soon. R. Meyer has written a series of papers to describe condensed matter systems, such as fractional quantum Hall systems, the Bose-Hubbard model, and anisotropic insulators, using the holography. H. Ooguri and R. Meyer, together with M. Oshikawa at the Institute for Solid State Physics (ISSP) and others, are planning a Focus Week at the Kavli IPMU in May to inspire further collaborations between high energy theorists and condensed matter theorists.

We regularly hold interdisciplinary seminars. In FY2014, we held 79 mathematics-string (MS) theory seminars, and 91 astronomy-cosmology-particle physics (ACP) seminars (astronomy-particle physics-experimental physics-cosmology (APEC) seminars after October 2014) in addition to 54 special seminars and monthly colloquia. We hosted an interdisciplinary symposium “Frontiers of Theoretical Science – MATTER, LIFE and COSMOS –” organized jointly by the Kavli IPMU, Riken ITHES (interdisciplinary Theoretical Science Group), and Osaka TSRP (Theoretical Science Research Project). The research cooperation is founded on two bilateral agreements between the Kavli IPMU and iTHES and between Osaka TSRP and iTHES respectively, and first manifestation of the cooperation among the three research institute to pursue theoretical study on a broad range of science. The Kavli IPMU speakers were H. Murayama, H. Ooguri, and 3 young researchers. The symposium attracted more than a hundred keen participants and provided hope for fruitful cooperation among three institutes in future. We also held the 24th workshop on General Relativity and Gravitation in Japan (JGRG) organized by S. Mukohyama together with T. Fujita and R. Namba. The aim of the workshop was comprehensive understanding of the General Relativity and gravity through various approaches. The symposium had 180 attendees from 15 different countries with 9 invited talks and 67 contributed talks covering a broad range of topics in both observational and theoretical aspects of cosmology and string theory.

## 3. Globalization of the institution

- \* Describe what's been accomplished or recognized in the efforts to raise the center's international recognition as a genuine top world-level research institute, along with innovative efforts proactively being taken in accordance with the development stage of the center, including the following points, for example:
  - Efforts being developed based on the analysis of number and state of world-leading, frontline researchers; number and state of visiting researchers; exchanges with overseas entities
  - Proactive efforts to raise the level of the center's international recognition
  - Efforts to make the center into one that attracts excellent young researchers from around the world (such as efforts fostering young researchers and contributing to advancing their career paths)

From the development stage, we have made effort to bring top-level leaders and talented young researchers from the world. We have established a fascinating research environment where researchers of different fields work together toward common goals. All of our 18 Principal Investigators (4 non-Japanese: 22%) are world-leading scientists. Other faculty members also play a leading role in each field and include PIs of big international projects of Belle II, EGADS, Kamland-Zen, SuMIRe, and SDSS IV/MaNGA. In 2014, we also added world-leading scientists to our new faculty members. Joint Prof. M. Hazumi, professor of KEK, is a principal investigator of the LiteBIRD project aiming for detecting inflationary gravitational wave. Y. Nomura, a professor of Berkeley, is well known in the field of a particle physics and cosmology. N. Yoshida is reappointed as a joint faculty member with Faculty of Science of UTokyo. We are proud of having attracted Mikhail Kapranov, a full professor at Yale, to our new faculty member. He is a distinguished mathematician and a leader in higher category theory. The appointment significantly boosts our international standing.

A large fraction of our researchers are non-Japanese. Out of 255 member researchers including faculty, postdoc, affiliate members, and long-time visitors, 105 (41%) are non-Japanese. During FY2014, we had 928 (1689) visitors (the numbers in the parentheses take into account multiple visits). Among them, 471 (549) are international and many of them are world-class scientists. The Kavli IPMU has been a key hub of exciting intellectual exchange. We also invited a number of prominent researchers to give lectures and seminars including Edward Witten (Fields Medalist, Prof. of Institute for Advanced Study (IAS)), Freeman Dyson (Prof. Emeritus of IAS), Peter Goddard (Prof. of IAS) and Rashid Sunyaev (Kyoto Prize, Director of Max-Planck Institute for Astrophysics).

Our JSPS proposal "Program for Advancing strategic international networks to accelerate the circulation of talented researchers" has been accepted. This program promotes exchanges of talented young researchers between the Kavli IPMU and world-top class foreign universities/institutes for long-term.

The Kavli IPMU hosted 13 international conferences and workshops in the broad range of fields: mathematics, string, theoretical astronomy, cosmology, galaxies, the Hyper-Kamiokande project and the T2K experiment. Among 884 participants in total, 313 were from foreign institutions. Holding conferences in the Kavli IPMU are important to raise our visibility in the international community and to show our leading role in different fields.

The Kavli IPMU researchers are encouraged to spend 1-3 months in the foreign institutes. This provides great opportunities for collaborative works and raises the visibility of the Kavli IPMU works. They presented numerous seminars and talks at both foreign and domestic institutions and conferences.

So far the Kavli IPMU signed 16 cooperative research agreements or memorandum of understanding (MOU). Faculty members in Berkeley stayed in the Kavli IPMU for the collaboration based on the developing strategic partnership. U Tokyo has a strategic partnership with Princeton to support the collaboration in research and boost interdisciplinary scholarship. The Kavli IPMU and Princeton has collaboration on the SuMIRe project for many years. The exchange program provides great opportunities for students at both universities and enforces the globalization of U Tokyo.

We recruit the brightest young people from the world as postdoctoral researchers and provide them with the best research environment so that they can conduct outstanding research. In 2014 winter, the Kavli IPMU obtained 766 applicants in total for the postdoctoral positions including Kavli fellows and new CREST fellows and 92% of them are from outside Japan. It is also noted that we attracted 7 new JSPS postdoctoral fellows. In total 19 new postdocs will join in FY2015.

Affiliation at the Kavli IPMU is now a successful career path. Our faculty member, S. Mukohyama was recruited as Professor at Kyoto University. Out of 26 postdocs left from the Kavli IPMU in FY2014, 9 got faculty positions, and 13 got another postdoctoral positions in top universities including Stanford, Cambridge, and Imperial College London. Our postdoc M. Werner moved to Hakubi Assistant Professorship at Kyoto University, contributing to globalization of Japanese academia.

#### 4. Implementing organizational reforms

\* If innovated system reforms generated by the center have had a ripple effect on other departments of the host institutions or on other research institutions, clearly describe in what ways.

The Kavli IPMU has achieved many reforms including non-traditional tenure positions, merit-based salary system, "nenpo" system, Kavli endowment and naming. Our successful system reforms are expected to



spread to the rest of the University and other research institutions to help boost the overall competitiveness of Japan on the global scale.

The first internal cross appointment for Prof. N. Yoshida between the faculty of science of the University of Tokyo and the Kavli IPMU started. The duty is 60% for the UT faculty and the rest of 40% is for the Kavli IPMU, in which he mainly works on the CREST project as PI. Such cross appointments enable more flexible time management, focusing on research depending on the schedule, and promoting interdisciplinary studies. The joint appointment for Prof. M. Hazumi between KEK (80%) and the Kavli IPMU (20%) has also started. He is the PI of the LiteBIRD experiment aiming for detecting primordial gravitational wave generated before big bang. This appointment consolidates the connection with KEK.

## 5. Efforts to secure the center's future development over the mid- to long term

- \* Please address the following items, which are essential to mid- to long-term center development:
  - Future Prospects with regard to the research plan, research organization and PI composition; prospects for the fostering and securing of next-generation researchers
  - Prospects for securing resources such as permanent positions and revenues; plan and/or implementation for defining the center's role and/or positioning the center within the host institution's institutional structure
  - Measures to sustain the center as a world premier international research center after program funding ends (including measures of support by the host institution)

We strengthen our current fields and mutual collaborative works more, and open new research fields of CMB and statistics. We hired M. Hazumi as a professor on a joint appointment with KEK, who is the PI of CMB polarization experiments of POLARBEAR2 and LiteBIRD. The new JST CREST project in collaboration with the Institute for the Statistical Mathematics brings new areas and tools of statistics and provides interdisciplinary connection with mathematics and astronomy projects. This creates new synergies among the field beyond our expectations at the launch of the institute.

We try to attain sufficient stability of the organization so that we can bring our research objectives beyond the WPI funding. UTokyo recognizes that the Kavli IPMU is world premier status. J. Hamada, the president of UTokyo, remarked "Kavli IPMU is our treasure". UTokyo promises on a permanent basis to sustain the Kavli IPMU at the current size after the WPI funding. TODIAS, established by UTokyo to house the Kavli IPMU as a permanent institute, received ¥200M per year permanent funding from MEXT starting from this year and MEXT have given us 4 tenure posts. As a result of the MEXT funding, Kavli foundation agreed to increase the endowment from ¥900M to ¥1500M (exchange rate: \$1=¥120). UTokyo agreed to provide 9 tenure positions of president's discretion by the end of FY2016 and 5 positions have been already secured. In the extension period, we plan to move PIship to younger researchers.

## 6. Others

- \* In addition to the above 1-5 evaluation items, only if there is anything else that deserves mention regarding the center project's progress, please note it.

On the occasion of CERN's 60th anniversary, Director Murayama delivered a speech titled "Science for peace and development today and tomorrow" at United Nations (UN) Headquarters in New York. He remarked that basic scientific research is a true peacemaker for humankind and appealed for the need to make places to unify all people toward common goals of science. He named "The Institute for the Physics and Mathematics of the Universe" to be the place open to anybody irrespective of origins to do research on the mystery of the universe. His speech is broadcast in UN Web TV and spreads the spirit of founding the Kavli IPMU worldwide.

The Kavli IPMU and Hamamatsu Photonics K.K. established the Endowed Research Unit: Dark side of the Universe. This is the first endowed research unit for the field of fundamental science in UTokyo to strengthen the discussions between researchers in fundamental physics and engineers in the company. K. Nomoto, our project professor, received the title of Hamamatsu Professor.

The Kavli IPMU has uploaded 40 videos in YouTube by introducing their own research for general audience since 2009. Social network service (SNS) such as Twitter and Facebook now has become important tools to share latest scientific information and to exchange the scientist's view. H. Murayama and many other members use SNS tools to introduce the news in the Kavli IPMU, which help raise the visibility of the institute. Scientific works by Kavli IPMU members has covered by media 366 times. We have many outreach activities and the number of audience is more than 4700. H. Murayama and H. Ooguri wrote many scientific books and

the published number of copies reaches 750,000. H. Ooguri was awarded the Kodansha Prize for Science Books for his popular science book "Introduction to Superstring Theory".

7. Center's response to the results of the FY2014 follow-up (including the results of the site visit)

\* Note how the center has responded to the results of FY2014 follow-up. However, if you have already provided this information, please indicate where in the report.

**Recommendations from FY 2014 follow-up**

1a) Since having students in Kavli IPMU is a necessity especially in its experimental program, it might consider jump-starting a graduate school program by partnering with a foreign university that can supply many good students.

The Kavli IPMU has research partnership with Princeton and Berkeley on the basis of memorandum of understanding (MOU) and the student exchange is increasing. We also proceed to take partnership with Oxford University and accept students to do their PhD research at the Kavli IPMU. We will make a serious attempt to create a new international graduate program to activate vigorous student exchanges. In the extension period, we propose to make a major attempt to create the Kavli Graduate School for the Physics and Mathematics of the Universe to attract highly selected students from the world.

1b) Incorporating novel statistical procedures in large astronomical data analysis, and paying attention to quality assurance of the data are both absolutely necessary.

Yes. The new JST CREST program has started from Oct 2014 by taking partnership with the Institute for the Statistical Mathematics (ISM). The Kavli IPMU offers a high-quality datasets of Subaru and ISM use their state-of-art statistical tools to analyze it. We already held a number of meetings.

1c) Collaboration with the Institute for The Statistical Mathematics is an excellent first step.

Thank you. The Kavli IPMU will gain access to state-of-the-art expertise in statistical methods. The ISM group will gain access to real-life data. Both groups have win-win relationship.

**Advice/recommendations from site visit report**

2a) Creative measures must be taken to allow associate and assistant professors to act (at least as effective) advisors of Ph.D. students. This was repeatedly recommended by the working group in the past. While the situation is improving slightly, we find that it is still far from ideal. A similar remark applies to the students themselves: We strongly encourage UTokyo and Kavli IPMU to find ways to attract the best graduate students from around the world. A special drive should go towards identifying and fostering gifted female students.

We agree with the importance of giving assistant and associate professors opportunities to work with graduate students. Our Associate Professors Taizan Watari and Yukinobu Toda are advising graduate students already. Associate Professors Shigeki Matsumoto and Simeon Hellerman, though not a formal member of the graduate school of science, have been working with graduate students from the University of Tokyo. Assistant Professors John Silverman and Alexie Leauthaud have been working with graduate students from Nagoya and Tohoku Universities. The new scheme to bring in graduate students from Oxford will provide opportunities to Full Professor Mark Vagins and Assistant Professor Mark Hartz starting the fall 2016. Appointment of our first female faculty member, Leauthaud, should help fostering female students. We have attracted one female graduate student working with Prof. Takada.

2b) Since having students at Kavli IPMU is very important especially for experimental program, Kavli IPMU might consider jump-starting the graduate school program by partnering with another foreign university, which can supply many good students.

This question is same as a recommendation from FY2014 follow-up and we have already answered in 1a.

2c) We recommend that, at reviews and presentations, the science advances made by Kavli IPMU be put in a global perspective. Increasingly forefront experiments are international collaborations, and the role of Kavli IPMU may not be completely unique. For example: the current Dark Energy Survey will be able to constrain the sum neutrino mass to the same precision as HSC+PFS soon - this was not mentioned; Future optical, infrared, and CMB experiments on the ground and in space will do much better – this was not mentioned.

Thanks for your comments. A difficulty in fair comparison with other projects is the difference in handling systematics, which substantially changes the expected power to constrain cosmological parameters such as neutrino mass. We again stress that the uniqueness of PFS is its high number density of galaxies 2200/sq.degs (cf.  $\sim 140$  for 2.5m BOSS and  $\sim 700$  for 4m DESI), which enables the BAO studies in a broad range of redshifts ( $0.6 < z < 2.6$ ) to carefully see the transition from cosmic deceleration to acceleration. BAO studies at  $z > 1.6$  using near infrared arm is very unique until the satellite mission WFIRST/AFTA survey comes around 2025. Combination of HSC with PFS enables us first high-precision cosmological analysis using galaxies because HSC lensing information substantially reduce the systematic uncertainty in galaxy biasing and Fingers-of-God effect.

2d) The proposal to appoint young on-site PIs is welcome.

We appreciate the comment.

2e) When we evaluate the Kavli IPMU's success in a large experimental project, we would ask the following question: "Was it possible to succeed in this experiment without the contribution from Kavli IPMU?". In the following projects: (1) SuperKEKB experiment; (2) The project which required appointment of PI's from FNAL and LHC, we were not convinced if, in the future, we would be able to answer "no" to the above question upon completion of these experiments.

The Kavli IPMU group headed by T. Higuchi plays a key role in the SuperKEKB experiment by assembling the silicon vertex detector (SVD), which is essential for the super-precise measurements of B-meson decay vertices. The Kavli IPMU provides him an environment to focus on conducting research. On the 1st floor in the Kavli IPMU building, we have built the facility including a class-1000 clean room, 3D coordinate measuring device, wire-pull tester and its automatic wire-border for developing the detector. The collaborators from other institutes also use this facility. The group's responsibility in the experiment is crucial and we can confidently say that the contribution from the Kavli IPMU is critical to the success of the experiment. We are attracting a female professor in HEP, Young-Kee Kim (a former deputy director of Fermi National Accelerator Laboratory) as our new PI in the near future to increase our contribution also in LHC and future accelerators.

2f) From the beginning of the WPI program, we urged that Japanese PI's should be sennin (full time) or split appointment rather than kennin (on loan from another department). Two important PIs did not attend this review due to the fact that they had important business at their respective home institution. It shows that their loyalty remains with their employer. We also note that intramural split appointment between Komaba and Kavli IPMU still has not been realized in spite of our strong recommendations. It is a pity, as Kavli IPMU has to compete with other institutes whose researchers are full time.

The cross or joint appointments are not easy to achieve because the partner institution needs to agree with the arrangements. U Tokyo made a joint appointments within the University possible in 2014 only for TODIAS, and we have attracted N. Yoshida to start an internal cross appointment between the Faculty of Science and the Kavli IPMU with split effort of 60/40%. M. Hazumi is on a joint appointment between KEK and the Kavli IPMU with a split effort of 80/20%. We will pursue similar appointments especially focusing on Komaba.

2g) Incorporating novel statistical procedures in astronomy big data analysis will be very challenging. The researchers should pay attention to quality assurance of the data in the statistical procedure.

This question is same as the recommendation from FY2014 follow-up and the answer is in 1b.

2h) To further expand its interdisciplinary activities, we recommend that Kavli IPMU seeks exchange of ideas with the humanities, in particular with philosophers and cultural scientists.

This is a very interesting suggestion. Philosophy is intrinsically the basis of physics and mathematics and shares a common goal to seek fundamental questions: what is the Universe made of? where do we come from? Collaboration with philosophers and sharing their ideas provides good opportunities to rethink the questions from the bottom up. As a part of such trans-disciplinary activities, we held a public event named "Science Onsen", a Japanese version of science cafe, in Kashiwa open campus and also JST Science Agora. The purpose is to get scientists to describe what makes science interesting while talking to a professional working in a field different from their own. In this event, M. Yamazaki (assist. prof. of the Kavli IPMU, theoretical physicist) talked with Rieko Shiga (photographer) and Yusuke Asai (painter) and exchanged their ideas on the relationship between science and art. These events are very interesting opportunities because such collaboration rarely happens. We plan to create opportunities for dialogs with

philosophers and researchers in humanities.

## List of Center's Research Results and Main Awards

### A. Refereed Papers

List only the Center's papers published in 2014. (Note: The list should be for the calendar year, not the fiscal year.)

(1) Divide the papers into two categories, A and B.

A. WPI papers

List papers whose author(s) can be identified as affiliated with the WPI program (e.g., that state the name of his/her WPI center). (*Not including* papers whose acknowledgements contain the names of persons affiliated with the WPI program.)

B. WPI-related papers

Among papers published in 2014, list those related to the WPI program but whose authors are not noted in the institutional affiliations as WPI affiliated. (*Including* papers whose acknowledgements contain the names of researchers affiliated with the WPI program.)

Note: On 14 December 2011, the Basic Research Promotion Division in MEXT's Research Promotion Bureau circulated an instruction requiring paper authors to include the name or abbreviation of their WPI center among their institutional affiliations. As some WPI-affiliated authors of papers published up to 2011 may not be aware of this requirement, their papers are treated as "WPI-related papers." From 2012, however, the authors' affiliations must be clearly noted and only category A papers will be listed.

*Newly selected centers are to list papers under category C below (in addition to categories A and B above).*

(2) Method of listing paper

- List only referred papers. Divide them into categories (e.g., original articles, reviews, proceedings).
- For each, write the author name(s); year of publication; journal name, volume, page(s), and article title. Any listing order may be used as long as format is the same. (The names of the center researchers do not need to be underlined.)
- If a paper has many authors (say, more than 20), all of their names do not need to be listed.
- If the papers are written in languages other than English, divide them into language categories when listing them.
- Assign a serial number to each paper to be used to identify it throughout the system.

(3) Submission of electronic data

- In addition to the above, for each paper provide a .csv file output from the Web of Science (e.g.) or other database giving the paper's raw data including Document ID. (Note: the Document ID is assigned by paper database.)
- These files do not need to be divided into paper categories.

(4) Use in assessments

- The lists of papers will be used in assessing the state of WPI project's progress in FY 2014.
- They will be used as reference in analyzing the trends and states of research in all the WPI centers, not to evaluate individual researcher performance.
- The special characteristics of each research domain will be considered when conducting assessments.

(5) Additional documents

After all documents, including these paper listings, showing the state of research progress have been submitted, additional documents may be requested.

### Order of Listing

#### A. WPI papers

1. Original articles
2. Review articles
3. Proceedings
4. Other English articles
5. Articles written in other than English

#### B. WPI-related papers

1. Original articles
2. Review articles
3. Proceedings
4. Other English articles
5. Articles written in other than English

## A. WPI papers

1. Original articles

No.	Author names and details
1	Spontaneously broken non-Abelian gauge symmetries in nonrelativistic systems Watanabe, Haruki; Murayama, Hitoshi PHYSICAL REVIEW D 90(12), 121703, DEC 30 2014
2	Holographic interpolation between a and F Kawano, Teruhiko; Nakaguchi, Yuki; Nishioka, Tatsuma JOURNAL OF HIGH ENERGY PHYSICS (12), 161, DEC 29 2014
3	Gain monitoring of telescope array photomultiplier cameras for the first 4 years of operation Shin, B. K. et al. NUCLEAR INSTRUMENTS & METHODS IN PHYSICS RESEARCH SECTION A-ACCELERATORS SPECTROMETERS DETECTORS AND ASSOCIATED EQUIPMENT 768, pp.96-103, DEC 21 2014
4	THE FINAL FATE OF STARS THAT IGNITE NEON AND OXYGEN OFF-CENTER: ELECTRON CAPTURE OR IRON CORE-COLLAPSE SUPERNOVA? Jones, Samuel; Hirschi, Raphael; Nomoto, Ken'ichi ASTROPHYSICAL JOURNAL 797(2), 83, DEC 20 2014
5	THE ZURICH ENVIRONMENTAL STUDY (ZENS) OF GALAXIES IN GROUPS ALONG THE COSMIC WEB. V. PROPERTIES AND FREQUENCY OF MERGING SATELLITES AND CENTRALS IN DIFFERENT ENVIRONMENTS Pipino, A.; Cibinel, A.; Tacchella, S.; Carollo, C. M.; Lilly, S. J.; Miniati, F.; Silverman, J. D.; van Gorkom, J. H.; Finoguenov, A. ASTROPHYSICAL JOURNAL 797(2), 127, DEC 20 2014
6	Dynamical fractional chaotic inflation Harigaya, Keisuke; Ibe, Masahiro; Schmitz, Kai; Yanagida, Tsutomu T. PHYSICAL REVIEW D 90(12), 123524, DEC 17 2014
7	Joint likelihood function of cluster counts and n-point correlation functions: Improving their power through including halo sample variance Schaan, Emmanuel; Takada, Masahiro; Spergel, David N. PHYSICAL REVIEW D 90(12), 123523, DEC 17 2014
8	Linear programming analysis of the R-parity violation within EDM-constraints Yamanaka, Nodoka; Sato, Toru; Kubota, Takahiro JOURNAL OF HIGH ENERGY PHYSICS (12), 110, DEC 16 2014
9	Understanding higher-order nonlocal halo bias at large scales by combining the power spectrum with the bispectrum Saito, Shun; Baldauf, Tobias; Vlah, Zvonimir; Seljak, Uros; Okumura, Tepei; McDonald, Patrick PHYSICAL REVIEW D 90(12), 123522, DEC 16 2014

10	Regularized cosmological power spectrum and correlation function in modified gravity models Taruya, Atsushi; Nishimichi, Takahiro; Bernardeau, Francis; Hiramatsu, Takashi; Koyama, Kazuya PHYSICAL REVIEW D 90(12), 123515, DEC 12 2014
11	Q-ball dark matter and baryogenesis in high-scale inflation Kasuya, Shinta; Kawasaki, Masahiro PHYSICS LETTERS B 739, pp.174-179, DEC 12 2014
12	R-symmetric axion/natural inflation in supergravity via deformed moduli dynamics Harigaya, Keisuke; Ibe, Masahiro; Yanagida, Tsutomu T. PHYSICS LETTERS B 739, pp.352-356, DEC 12 2014
13	Measurement of the Inclusive Electron Neutrino Charged Current Cross Section on Carbon with the T2K Near Detector Abe, K. et al. PHYSICAL REVIEW LETTERS 113(24), 241803, DEC 11 2014
14	ACCELERATED EVOLUTION OF THE Ly alpha LUMINOSITY FUNCTION AT z greater than or similar to 7 REVEALED BY THE SUBARU ULTRA-DEEP SURVEY FOR Ly alpha EMITTERS AT z=7.3 Konno, Akira; Ouchi, Masami; Ono, Yoshiaki; Shimasaku, Kazuhiro; Shibuya, Takatoshi; Furusawa, Hisanori; Nakajima, Kimihiko; Naito, Yoshiaki; Momose, Rieko; Yuma, Suraphong; Iye, Masanori ASTROPHYSICAL JOURNAL 797(1), 16, DEC 10 2014
15	THE HYDROGEN-POOR SUPERLUMINOUS SUPERNOVA iPTF 13ajg AND ITS HOST GALAXY IN ABSORPTION AND EMISSION Vreeswijk, Paul M. et al. ASTROPHYSICAL JOURNAL 797(1), 24, DEC 10 2014
16	UNDERSTANDING THE UNIQUE ASSEMBLY HISTORY OF CENTRAL GROUP GALAXIES Vulcani, Benedetta; Bundy, Kevin; Lackner, Claire; Leauthaud, Alexie; Treu, Tommaso; Mei, Simona; Coccato, Lodovico; Kneib, Jean Paul; Auger, Matthew; Nipoti, Carlo ASTROPHYSICAL JOURNAL 797(1), 62, DEC 10 2014
17	Multivariate regression analysis of gravitational waves from rotating core collapse Engels, William J.; Frey, Raymond; Ott, Christian D. PHYSICAL REVIEW D 90(12), 124026, DEC 8 2014
18	Entropy of conformal perturbation defects Konechny, Anatoly; Schmidt-Colinet, Cornelius JOURNAL OF PHYSICS A-MATHEMATICAL AND THEORETICAL 47(48), 485401, DEC 5 2014
19	Kiso Supernova Survey (KISS): Survey strategy Morokuma, Tomoki et al. PUBLICATIONS OF THE ASTRONOMICAL SOCIETY OF JAPAN 66(6), 114, DEC 2014
21	Hidden axion dark matter decaying through mixing with QCD axion and the 3.5 keV X-ray line Higaki, Tetsutaro; Kitajima, Naoya; Takahashi, Fuminobu JOURNAL OF COSMOLOGY AND ASTROPARTICLE PHYSICS (12), 4, DEC 2014
22	A new quasidilaton theory of massive gravity Mukohyama, Shinji JOURNAL OF COSMOLOGY AND ASTROPARTICLE PHYSICS (12), 11, DEC 2014
23	Cosmological tests using redshift space clustering in BOSS DR11 Song, Yong-Seon; Sabiu, Cristiano G.; Okumura, Teppei; Oh, Minji; Linder, Eric V. JOURNAL OF COSMOLOGY AND ASTROPARTICLE PHYSICS (12), 5, DEC 2014

24	The Giant Gemini GMOS survey of $z(\text{em}) > 4.4$ quasars - I. Measuring the mean free path across cosmic time Worseck, Gabor; Prochaska, J. Xavier; O'Meara, John M.; Becker, George D.; Ellison, Sara L.; Lopez, Sebastian; Meiksin, Avery; Menard, Brice; Murphy, Michael T.; Fumagalli, Michele MONTHLY NOTICES OF THE ROYAL ASTRONOMICAL SOCIETY 445(2), pp.1745-1760, DEC 1 2014
25	First results of the Belle II Silicon Vertex Detector readout system Friedl, M. et al. JOURNAL OF INSTRUMENTATION 9, C12005, DEC 2014
26	LATE-STAGE GALAXY MERGERS IN COSMOS TO $z$ similar to 1 Lackner, C. N.; Silverman, J. D.; Salvato, M.; Kampczyk, P.; Kartaltepe, J. S.; Sanders, D.; Capak, P.; Civano, F.; Halliday, C.; Ilbert, O.; Jahnke, K.; Koekemoer, A. M.; Lee, N.; Le Fevre, O.; Liu, C. T.; Scoville, N.; Sheth, K.; Toft, S. ASTRONOMICAL JOURNAL 148(6), 137, DEC 2014
27	Super-sample signal Li, Yin; Hu, Wayne; Takada, Masahiro PHYSICAL REVIEW D 90(10), 103530, NOV 25 2014
28	Phase locked inflation. Effectively trans-Planckian natural inflation Harigaya, Keisuke; Ibe, Masahiro JOURNAL OF HIGH ENERGY PHYSICS (11), 147, NOV 25 2014
29	Topological Higgs inflation: Origin of Standard Model criticality Hamada, Yuta; Oda, Kin-ya; Takahashi, Fuminobu PHYSICAL REVIEW D 90(9), 97301, NOV 21 2014
30	The silicon strip vertex detector of the Belle II experiment Onuki, Yoshiyuki NUCLEAR INSTRUMENTS & METHODS IN PHYSICS RESEARCH SECTION A-ACCELERATORS SPECTROMETERS DETECTORS AND ASSOCIATED EQUIPMENT 765, pp.99-102, NOV 21 2014
31	Abundance stratification in Type Ia supernovae - IV. The luminous, peculiar SN 1991T Sasdelli, Michele; Mazzali, P. A.; Pian, E.; Nomoto, K.; Hachinger, S.; Cappellaro, E.; Benetti, S. MONTHLY NOTICES OF THE ROYAL ASTRONOMICAL SOCIETY 445(1), pp.711-725, NOV 21 2014
32	Do we expect most AGN to live in discs? Hopkins, Philip F.; Kocevski, Dale D.; Bundy, Kevin MONTHLY NOTICES OF THE ROYAL ASTRONOMICAL SOCIETY 445(1), pp.823-834, NOV 21 2014
33	The Physics of the B Factories Bevan, A. J. et al. EUROPEAN PHYSICAL JOURNAL C 74(11), 3026, NOV 19 2014
34	Topological inflation from the Starobinsky model in supergravity Kamada, Kohei; Yokoyama, Jun'ichi PHYSICAL REVIEW D 90(10), 103520, NOV 14 2014
35	An optimal survey geometry of weak lensing survey: minimizing supersample covariance Takahashi, Ryuichi; Soma, Shunji; Takada, Masahiro; Kayo, Issha MONTHLY NOTICES OF THE ROYAL ASTRONOMICAL SOCIETY 444(4), pp.3473-3487, NOV 11 2014



36	The clustering of galaxies in the SDSS-III Baryon Oscillation Spectroscopic Survey: signs of neutrino mass in current cosmological data sets Beutler, Florian; Saito, Shun; Brownstein, Joel R.; Chuang, Chia-Hsun; Cuesta, Antonio J.; Percival, Will J.; Ross, Ashley J.; Ross, Nicholas P.; Schneider, Donald P.; Samushia, Lado; Sanchez, Ariel G.; Seo, Hee-Jong; Tinker, Jeremy L.; Wagner, Christian; Weaver, Benjamin A. MONTHLY NOTICES OF THE ROYAL ASTRONOMICAL SOCIETY 444(4), pp.3501-3516, NOV 11 2014
37	Sneutrino chaotic inflation and landscape Murayama, Hitoshi; Nakayama, Kazunori; Takahashi, Fuminobu; Yanagida, Tsutomu T. PHYSICS LETTERS B 738, pp.196-200, NOV 10 2014
38	Simple realization of inflaton potential on a Riemann surface Harigaya, Keisuke; Ibe, Masahiro PHYSICS LETTERS B 738, pp.301-304, NOV 10 2014
39	Massive graviton on a spatial condensate Lin, Chunshan PHYSICS LETTERS B 738, pp.386-390, NOV 10 2014
40	THE OPTICAL LUMINOSITY FUNCTION OF GAMMA-RAY BURSTS DEDUCED FROM ROTSE-III OBSERVATIONS Cui, X. H.; Wu, X. F.; Wei, J. J.; Yuan, F.; Zheng, W. K.; Liang, E. W.; Akerlof, C. W.; Ashley, M. C. B.; Flewelling, H. A.; Gogus, E.; Guver, T.; Kiziloglu, U.; Mckay, T. A.; Pandey, S. B.; Rykoff, E. S.; Rujopakarn, W.; Schaefer, B. E.; Wheeler, J. C.; Yost, S. A. ASTROPHYSICAL JOURNAL 795(2), 103, NOV 10 2014
41	DEFINING PHOTOMETRIC PECULIAR TYPE Ia SUPERNOVAE Gonzalez-Gaitan, S.; Hsiao, E. Y.; Pignata, G.; Foerster, F.; Gutierrez, C. P.; Bufano, F.; Galbany, L.; Folatelli, G.; Phillips, M. M.; Hamuy, M.; Anderson, J. P.; de Jaeger, T. ASTROPHYSICAL JOURNAL 795(2), 142, NOV 10 2014
42	Fine tunings for inflation with simple potentials Izawa, K. -I. PROGRESS OF THEORETICAL AND EXPERIMENTAL PHYSICS (11), 113B05, NOV 2014
43	The chaotic regime of D-term inflation Buchmueller, W.; Domcke, V.; Schmitz, K. JOURNAL OF COSMOLOGY AND ASTROPARTICLE PHYSICS (11), 6, NOV 2014
44	OPTICAL AND NEAR-INFRARED POLARIMETRY OF HIGHLY REDDENED Type Ia SUPERNOVA 2014J: PECULIAR PROPERTIES OF DUST IN M82 Kawabata, K. S. et al. ASTROPHYSICAL JOURNAL LETTERS 795(1), L4, NOV 1 2014
45	THE PROPERTIES OF THE COOL CIRCUMGALACTIC GAS PROBED WITH THE SDSS, WISE, AND GALEX SURVEYS Lan, Ting-Wen; Menard, Brice; Zhu, Guangtun ASTROPHYSICAL JOURNAL 795(1), 31, NOV 1 2014
46	FAINT SUBMILLIMETER GALAXIES REVEALED BY MULTIFIELD DEEP ALMA OBSERVATIONS: NUMBER COUNTS, SPATIAL CLUSTERING, AND A DARK SUBMILLIMETER LINE EMITTER Ono, Yoshiaki; Ouchi, Masami; Kurono, Yasutaka; Momose, Rieko ASTROPHYSICAL JOURNAL 795(1), 5, NOV 1 2014
47	THE s-PROCESS ENRICHMENT OF THE GLOBULAR CLUSTERS M4 AND M22 Shingles, Luke J.; Karakas, Amanda I.; Hirschi, Raphael; Fishlock, Cherie K.; Yong, David; Da Costa, Gary S.; Marino, Anna F. ASTROPHYSICAL JOURNAL 795(1), 34, NOV 1 2014

48	Adaptive optics observations of the gravitationally lensed quasar SDSS J1405+0959 Rusu, Cristian E.; Oguri, Masamune; Minowa, Yosuke; Iye, Masanori; More, Anupreeta; Inada, Naohisa; Oya, Shin MONTHLY NOTICES OF THE ROYAL ASTRONOMICAL SOCIETY 444(3), pp.2561-2570, NOV 1 2014
49	Study of gluing and wire bonding for the Belle II Silicon Vertex Detector Kang, K. H.; Hara, K.; Higuchi, T.; Hyun, H. J.; Jeon, H. B.; Joo, C. W.; Kah, D. H.; Kim, H. J.; Mibe, T.; Onuki, Y.; Park, H.; Rao, K. K.; Sato, N.; Shimizu, N.; Tanida, K.; Tsuboyama, T.; Uozumi, S. NUCLEAR INSTRUMENTS & METHODS IN PHYSICS RESEARCH SECTION A-ACCELERATORS SPECTROMETERS DETECTORS AND ASSOCIATED EQUIPMENT 763, pp.255-259, NOV 1 2014
50	Measurement of the neutrino-oxygen neutral-current interaction cross section by observing nuclear deexcitation gamma rays Abe, K. et al. PHYSICAL REVIEW D 90(7), 72012, OCT 31 2014
51	Multicomponent dark matter in radiative seesaw model and monochromatic neutrino flux Aoki, Mayumi; Kubo, Jisuke; Takano, Hiroshi PHYSICAL REVIEW D 90(7), 76011, OCT 31 2014
52	Anomaly mediated gaugino mass and path-integral measure Harigaya, Keisuke; Ibe, Masahiro PHYSICAL REVIEW D 90(8), 85028, OCT 31 2014
53	Measurement of time-dependent CP violation in $B^0 - \eta' K^0$ decays Santelj, L. et al. JOURNAL OF HIGH ENERGY PHYSICS (10), 165, OCT 29 2014
54	Pure gravity mediation and chaotic inflation in supergravity Harigaya, Keisuke; Yanagida, Tsutomu T. PHYSICAL REVIEW D 90(7), 75022, OCT 28 2014
55	Singlet Majorana fermion dark matter: a comprehensive analysis in effective field theory Matsumoto, Shigeki; Mukhopadhyay, Satyanarayan; Tsai, Yue-Lin Sming JOURNAL OF HIGH ENERGY PHYSICS (10), 155, OCT 27 2014
56	Upper bounds on gluino, squark and higgsino masses in the focus point gaugino mediation with a mild fine tuning $\Delta$ a parts per thousand currency sign 100 Yanagida, Tsutomu T.; Yokozaki, Norimi JOURNAL OF HIGH ENERGY PHYSICS (10), 133, OCT 23 2014
57	From Maxwell-Chern-Simons theory in AdS(3) towards hydrodynamics in 1+1 dimensions Chang, Han-Chih; Fujita, Mitsutoshi; Kaminski, Matthias JOURNAL OF HIGH ENERGY PHYSICS (10), 118, OCT 21 2014
58	Observation of the decay $B^0 \rightarrow \eta' K^*(892)^0$ Sato, S. et al. PHYSICAL REVIEW D 90(7), 72009, OCT 21 2014
59	Causality and hyperbolicity of Lovelock theories Reall, Harvey S.; Tanahashi, Norihiro; Way, Benson CLASSICAL AND QUANTUM GRAVITY 31(20), 205005, OCT 21 2014
60	Hall viscosity and angular momentum in gapless holographic models Liu, Hong; Ooguri, Hiroshi; Stoica, Bogdan PHYSICAL REVIEW D 90(8), 86007, OCT 20 2014

61	RESOLVING THE CLUMPY STRUCTURE OF THE OUTFLOW WINDS IN THE GRAVITATIONALLY LENSED QUASAR SDSS J1029+2623 Misawa, Toru; Inada, Naohisa; Oguri, Masamune; Gandhi, Poshak; Horiuchi, Takashi; Koyamada, Suzuka; Okamoto, Rina ASTROPHYSICAL JOURNAL LETTERS 794(2), L20, OCT 20 2014
62	SEARCHES FOR LARGE-SCALE ANISOTROPY IN THE ARRIVAL DIRECTIONS OF COSMIC RAYS DETECTED ABOVE ENERGY OF 10(19) eV AT THE PIERRE AUGER OBSERVATORY AND THE TELESCOPE ARRAY Aab, A. et al. ASTROPHYSICAL JOURNAL 794(2), 172, OCT 20 2014
63	A MEASUREMENT OF THE COSMIC MICROWAVE BACKGROUND B-MODE POLARIZATION POWER SPECTRUM AT SUB-DEGREE SCALES WITH POLARBEAR Ade, P. A. R. et al. ASTROPHYSICAL JOURNAL 794(2), 171, OCT 20 2014
64	A STATISTICAL ANALYSIS OF SEEDS AND OTHER HIGH-CONTRAST EXOPLANET SURVEYS: MASSIVE PLANETS OR LOW-MASS BROWN DWARFS? Brandt, Timothy D. et al. ASTROPHYSICAL JOURNAL 794(2), 159, OCT 20 2014
65	MOSFIRE AND LDSS3 SPECTROSCOPY FOR AN [O-II] BLOB AT $z=1.18$ : GAS OUTFLOW AND ENERGY SOURCE Harikane, Yuichi; Ouchi, Masami; Yuma, Suraphong; Rauch, Michael; Nakajima, Kimihiko; Ono, Yoshiaki ASTROPHYSICAL JOURNAL 794(2), 129, OCT 20 2014
66	Search for proton decay via $p \rightarrow \nu K^+$ using 260 kiloton.year data of Super-Kamiokande Abe, K. et al. PHYSICAL REVIEW D 90(7), 72005, OCT 14 2014
67	Exploring theory space with Monte Carlo reweighting Gainer, James S.; Lykken, Joseph; Matchev, Konstantin T.; Mrenna, Stephen; Park, Myeonghun JOURNAL OF HIGH ENERGY PHYSICS (10), 78, OCT 13 2014
68	A cluster finding algorithm based on the multiband identification of red sequence galaxies Oguri, Masamune MONTHLY NOTICES OF THE ROYAL ASTRONOMICAL SOCIETY 444(1), pp.147-161, OCT 11 2014
69	Quantum F-un: the $q=1$ limit of Galois field quantum mechanics, projective geometry and the field with one element Chang, Lay Nam; Lewis, Zachary; Minic, Djordje; Takeuchi, Tatsu JOURNAL OF PHYSICS A-MATHEMATICAL AND THEORETICAL 47(40), 405304, OCT 10 2014
70	SIGNATURES OF A COMPANION STAR IN TYPE IA SUPERNOVAE Maeda, Keiichi; Kutsuna, Masamichi; Shigeyama, Toshikazu ASTROPHYSICAL JOURNAL 794(1), 37, OCT 10 2014
71	THE PROGENITORS OF LOCAL ULTRA-MASSIVE GALAXIES ACROSS COSMIC TIME: FROM DUSTY STAR-BURSTING TO QUIESCENT STELLAR POPULATIONS Marchesini, Danilo; Muzzin, Adam; Stefanon, Mauro; Franx, Marijn; Brammer, Gabriel G.; Marsan, Cemile Z.; Vulcani, Benedetta; Fynbo, J. P. U.; Milvang-Jensen, Bo; Dunlop, James S.; Buitrago, Fernando ASTROPHYSICAL JOURNAL 794(1), 65, OCT 10 2014
72	Extra light fermions in E-6-inspired models and the 3.5 keV X-ray line signal Nakayama, Kazunori; Takahashi, Fuminobu; Yanagida, Tsutomu T. PHYSICS LETTERS B 737, pp.311-313, OCT 7 2014

73	Compressed SUSY search at the 13 TeV LHC using kinematic correlations and structure of ISR jets Mukhopadhyay, Satyanarayan; Nojiri, Mihoko M.; Yanagida, Tsutomu T. JOURNAL OF HIGH ENERGY PHYSICS (10), 12, OCT 2 2014
74	Relic vector field and CMB large scale anomalies Chen, Xingang; Wang, Yi JOURNAL OF COSMOLOGY AND ASTROPARTICLE PHYSICS (10), 27, OCT 2014
75	Non-perturbative approach for curvature perturbations in stochastic-delta N formalism Fujita, Tomohiro; Kawasaki, Masahiro; Tada, Yuichiro JOURNAL OF COSMOLOGY AND ASTROPARTICLE PHYSICS (10), 30, OCT 2014
76	CDM/baryon isocurvature perturbations in a sneutrino curvaton model Harigaya, Keisuke; Hayakawa, Taku; Kawasaki, Masahiro; Yokoyama, Shuichiro JOURNAL OF COSMOLOGY AND ASTROPARTICLE PHYSICS (10), 68, OCT 2014
77	Hamiltonian structure of scalar-tensor theories beyond Horndeski Lin, Chunshan; Mukohyama, Shinji; Namba, Ryo; Saitou, Rio JOURNAL OF COSMOLOGY AND ASTROPARTICLE PHYSICS (10), 71, OCT 2014
78	Kobayashi pseudometric on hyperkahler manifolds Kamenova, Ljudmila; Lu, Steven; Verbitsky, Misha JOURNAL OF THE LONDON MATHEMATICAL SOCIETY-SECOND SERIES 90, pp.436-450, OCT 2014
79	Universal profiles of the intracluster medium from Suzaku X-ray and Subaru weak-lensing observations Okabe, Nobuhiro; Umetsu, Keiichi; Tamura, Takayuki; Fujita, Yutaka; Takizawa, Motokazu; Zhang, Yu-Ying; Matsushita, Kyoko; Hamana, Takashi; Fukazawa, Yasushi; Futamase, Toshifumi; Kawaharada, Madoka; Miyazaki, Satoshi; Mochizuki, Yukiko; Nakazawa, Kazuhiro; Ohashi, Takaya; Ota, Naomi; Sasaki, Toru; Sato, Kosuke; Tam, Sutieng PUBLICATIONS OF THE ASTRONOMICAL SOCIETY OF JAPAN 66(5), 99, OCT 2014
80	DWARF IRREGULAR GALAXY LEO A: SUPRIME-CAM WIDE-FIELD STELLAR PHOTOMETRY Stonkute, Rima; Arimoto, Nobuo; Hasegawa, Takashi; Narbutis, Donatas; Tamura, Naoyuki; Vansevicius, Vladas ASTROPHYSICAL JOURNAL SUPPLEMENT SERIES 214(2), 19, OCT 2014
81	Effects of cosmic strings with delayed scaling on CMB anisotropy Kamada, Kohei; Miyamoto, Yuhei; Yamauchi, Daisuke; Yokoyama, Jun'ichi PHYSICAL REVIEW D 90(8), 83502, OCT 1 2014
82	Extensive HST ultraviolet spectra and multiwavelength observations of SN 2014J in M82 indicate reddening and circumstellar scattering by typical dust Foley, Ryan J. et al. MONTHLY NOTICES OF THE ROYAL ASTRONOMICAL SOCIETY 443(4), pp.2887-2906, OCT 1 2014
83	LoCuSS: the near-infrared luminosity and weak-lensing mass scaling relation of galaxy clusters Mulroy, Sarah L.; Smith, Graham P.; Haines, Chris P.; Marrone, Daniel P.; Okabe, Nobuhiro; Pereira, Maria J.; Egami, Eiichi; Babul, Arif; Finoguenov, Alexis; Martino, Rossella MONTHLY NOTICES OF THE ROYAL ASTRONOMICAL SOCIETY 443(4), pp.3309-3317, OCT 1 2014

84	On the systematic errors of cosmological-scale gravity tests using redshift-space distortion: non-linear effects and the halo bias Ishikawa, Takashi; Totani, Tomonori; Nishimichi, Takahiro; Takahashi, Ryuichi; Yoshida, Naoki; TONEGAWA, Motonari MONTHLY NOTICES OF THE ROYAL ASTRONOMICAL SOCIETY 443(4), pp.3359-3367, OCT 1 2014
85	iPTF13bvn: THE FIRST EVIDENCE OF A BINARY PROGENITOR FOR A TYPE Ib SUPERNOVA Bersten, Melina C.; Benvenuto, Omar G.; Folatelli, Gaston; Nomoto, Ken'ichi; Kuncarayakti, Hanindy; Srivastav, Shubham; Anupama, G. C.; Quimby, Robert; Sahu, Devendra K. ASTRONOMICAL JOURNAL 148(4), 68, OCT 2014
86	SHORTEST RECURRENCE PERIODS OF NOVAE Kato, Mariko; Saio, Hideyuki; Hachisu, Izumi; Nomoto, Ken'ichi ASTROPHYSICAL JOURNAL 793(2), 136, OCT 1 2014
87	Neutrino Physics (Rapporteur talk) Nakahata, Masayuki BRAZILIAN JOURNAL OF PHYSICS 44(5), pp.465-482, OCT 2014
88	A BLUE POINT SOURCE AT THE LOCATION OF SUPERNOVA 2011DH Folatelli, Gaston; Bersten, Melina C.; Benvenuto, Omar G.; Van Dyk, Schuyler D.; Kuncarayakti, Hanindy; Maeda, Keiichi; Nozawa, Takaya; Nomoto, Ken'ichi; Hamuy, Mario; Quimby, Robert M. ASTROPHYSICAL JOURNAL LETTERS 793(2), L22, OCT 1 2014
89	Dense molecular cloud cores as a source of micrometer-sized grains in galaxies Hirashita, Hiroyuki; Asano, Ryosuke S.; Nozawa, Takaya; Li, Zhi-Yun; Liu, Ming-Chang PLANETARY AND SPACE SCIENCE 100, pp.40-45, OCT 1 2014
90	Measurement of the inclusive $\nu(\mu)$ charged current cross section on iron and hydrocarbon in the T2K on-axis neutrino beam Abe, K. et al. PHYSICAL REVIEW D 90(5), 52010, SEP 30 2014
91	Effective Lagrangian for Nonrelativistic Systems Watanabe, Haruki; Murayama, Hitoshi PHYSICAL REVIEW X 4(3), 31057, SEP 29 2014
92	Cosmic neutrino background absorption line in the neutrino spectrum at IceCube Ibe, Masahiro; Kaneta, Kunio PHYSICAL REVIEW D 90(5), 53011, SEP 24 2014
93	a - c test of holography versus quantum renormalization group Nakayama, Yu MODERN PHYSICS LETTERS A 29(29), 1450158, SEP 21 2014
94	The M-BH-M-* relation for X-ray-obscured, red QSOs at $1.2 < z < 2.6$ Bongiorno, A.; Maiolino, R.; Brusa, M.; Marconi, A.; Piconcelli, E.; Lamastra, A.; Cano-Diaz, M.; Schulze, A.; Magnelli, B.; Vignali, C.; Fiore, F.; Menci, N.; Cresci, G.; La Franca, F.; Merloni, A. MONTHLY NOTICES OF THE ROYAL ASTRONOMICAL SOCIETY 443(3), pp.2077-2091, SEP 21 2014
95	Initial mass function of intermediate-mass black hole seeds Ferrara, A.; Salvadori, S.; Yue, B.; Schleicher, D. MONTHLY NOTICES OF THE ROYAL ASTRONOMICAL SOCIETY 443(3), pp.2410-2425, SEP 21 2014

96	A CONTINUUM OF H- TO He-RICH TIDAL DISRUPTION CANDIDATES WITH A PREFERENCE FOR E plus A GALAXIES Arcavi, Iair et al. ASTROPHYSICAL JOURNAL 793(1), 38, SEP 20 2014
97	TESTING MONDian DARK MATTER WITH GALACTIC ROTATION CURVES Edmonds, Doug; Farrah, Duncan; Ho, Chiu Man; Minic, Djordje; Ng, Y. Jack; Takeuchi, Tatsu ASTROPHYSICAL JOURNAL 793(1), 41, SEP 20 2014
98	Search for Nucleon Decay via $n \rightarrow (\bar{\nu} \pi^0)$ and $p \rightarrow (\bar{\nu} \pi^+)$ in Super-Kamiokande Abe, K. et al. PHYSICAL REVIEW LETTERS 113(12), 121802, SEP 19 2014
99	Search for Bosonic Superweakly Interacting Massive Dark Matter Particles with the XMASS-I Detector Abe, K. et al. PHYSICAL REVIEW LETTERS 113(12), 121301, SEP 18 2014
100	The clustering of galaxies in the SDSS-III Baryon Oscillation Spectroscopic Survey: testing gravity with redshift space distortions using the power spectrum multipoles Beutler, Florian; Saito, Shun; Seo, Hee-Jong; Brinkmann, Jon; Dawson, Kyle S.; Eisenstein, Daniel J.; Font-Ribera, Andreu; Ho, Shirley; McBride, Cameron K.; Montesano, Francesco; Percival, Will J.; Ross, Ashley J.; Ross, Nicholas P.; Samushia, Lado; Schlegel, David J.; Sanchez, Ariel G.; Tinker, Jeremy L.; Weaver, Benjamin A. MONTHLY NOTICES OF THE ROYAL ASTRONOMICAL SOCIETY 443(2), pp.1065-1089, SEP 11 2014
101	Multi-epoch high-spectral-resolution observations of neutral sodium in 14 Type Ia supernovae Sternberg, A.; Gal-Yam, A.; Simon, J. D.; Patat, F.; Hillebrandt, W.; Phillips, M. M.; Foley, R. J.; Thompson, I.; Morrell, N.; Chomiuk, L.; Soderberg, A. M.; Yong, D.; Kraus, A. L.; Herczeg, G. J.; Hsiao, E. Y.; Raskutti, S.; Cohen, J. G.; Mazzali, P. A.; Nomoto, K. MONTHLY NOTICES OF THE ROYAL ASTRONOMICAL SOCIETY 443(2), pp.1849-1860, SEP 11 2014
102	FAINT POPULATION III SUPERNOVAE AS THE ORIGIN OF THE MOST IRON-POOR STARS Ishigaki, Miho N.; Tominaga, Nozomu; Kobayashi, Chiaki; Nomoto, Ken'ichi ASTROPHYSICAL JOURNAL LETTERS 792(2), L32, SEP 10 2014
103	Multi-hadron final states in RPV supersymmetric models with extra matter Asano, Masaki; Sakurai, Kazuki; Yanagida, Tsutomu T. PHYSICS LETTERS B 736, pp.356-360, SEP 7 2014
104	Flat direction inflation with running kinetic term and baryogenesis Kasuya, Shinta; Takahashi, Fuminobu PHYSICS LETTERS B 736, pp.526-532, SEP 7 2014
105	Cosmology in rotation-invariant massive gravity with non-trivial fiducial metric Langlois, David; Mukohyama, Shinji; Namba, Ryo; Naruko, Atsushi CLASSICAL AND QUANTUM GRAVITY 31(17), 175003, SEP 7 2014
106	Search for Trilepton Nucleon Decay via $p \rightarrow e^+ \nu \nu$ and $p \rightarrow \mu^+ \nu \nu$ in the Super-Kamiokande Experiment Takhistov, V. et al. PHYSICAL REVIEW LETTERS 113(10), 101801, SEP 4 2014

107	Cross correlation of cosmic shear and extragalactic gamma-ray background: Constraints on the dark matter annihilation cross section Shirasaki, Masato; Horiuchi, Shunsaku; Yoshida, Naoki PHYSICAL REVIEW D 90(6), 63502, SEP 3 2014
109	Electron-capture supernovae exploding within their progenitor wind Moriya, Takashi J.; Tominaga, Nozomu; Langer, Norbert; Nomoto, Ken'ichi; Blinnikov, Sergei I.; Sorokina, Elena I. ASTRONOMY & ASTROPHYSICS 569, A57, SEP 2014
110	Kinetic term anarchy for polynomial chaotic inflation Nakayama, Kazunori; Takahashi, Fuminobu; Yanagida, Tsutomu T. JOURNAL OF HIGH ENERGY PHYSICS (9), 14, SEP 1 2014
111	The Daya Bay and T2K results on $\sin(2) 2 \theta(13)$ and non-standard neutrino interactions Girardi, I.; Meloni, D.; Petcov, S. T. NUCLEAR PHYSICS B 886, pp.31-42, SEP 2014
112	SUPERNOVA 2010as: THE LOWEST-VELOCITY MEMBER OF A FAMILY OF FLAT-VELOCITY TYPE IIb SUPERNOVAE Folatelli, Gaston et al. ASTROPHYSICAL JOURNAL 792(1), 7, SEP 1 2014
113	THE MASS SPECTRUM OF THE FIRST STARS Susa, Hajime; Hasegawa, Kenji; Tominaga, Nozomu ASTROPHYSICAL JOURNAL 792(1), 32, SEP 1 2014
114	THE FMOS-COSMOS SURVEY OF STAR-FORMING GALAXIES AT $z$ similar to 1.6. II. THE MASS-METALLICITY RELATION AND THE DEPENDENCE ON STAR FORMATION RATE AND DUST EXTINCTION Zahid, H. J. et al. ASTROPHYSICAL JOURNAL 792(1), 75, SEP 1 2014
115	A multiwavelength consensus on the main sequence of star-forming galaxies at $z$ similar to 2 Rodighiero, G. et al. MONTHLY NOTICES OF THE ROYAL ASTRONOMICAL SOCIETY 443(1), pp.19-30, SEP 1 2014
116	The X-ray spectra of the first galaxies: 21 cm signatures Pacucci, Fabio; Mesinger, Andrei; Mineo, Stefano; Ferrara, Andrea MONTHLY NOTICES OF THE ROYAL ASTRONOMICAL SOCIETY 443(1), pp.678-686, SEP 1 2014
117	Integral field spectroscopy of nearby QSOs - I. ENLR size-luminosity relation, ongoing star formation and resolved gas-phase metallicities Husemann, B.; Jahnke, K.; Sanchez, S. F.; Wisotzki, L.; Nugroho, D.; Kupko, D.; Schramm, M. MONTHLY NOTICES OF THE ROYAL ASTRONOMICAL SOCIETY 443(1), pp.755-783, SEP 1 2014
118	Novikov homology, jump loci and Massey products Kohno, Toshitake; Pajitnov, Andrei CENTRAL EUROPEAN JOURNAL OF MATHEMATICS 12(9), pp.1285-1304, SEP 2014
119	Large impacts around a solar-analog star in the era of terrestrial planet formation Meng, Huan Y. A.; Su, Kate Y. L.; Rieke, George H.; Stevenson, David J.; Plavchan, Peter; Rujopakarn, Wiphu; Lisse, Carey M.; Poshyachinda, Saran; Reichart, Daniel E. SCIENCE 345(6200), pp.1032-1035, AUG 29 2014
120	A chemical signature of first-generation very massive stars Aoki, W.; Tominaga, N.; Beers, T. C.; Honda, S.; Lee, Y. S. SCIENCE 345(6199), pp.912-915, AUG 22 2014

121	THE UNIVERSAL RELATION OF GALACTIC CHEMICAL EVOLUTION: THE ORIGIN OF THE MASS-METALLICITY RELATION Zahid, H. Jabran; Dima, Gabriel I.; Kudritzki, Rolf-Peter; Kewley, Lisa J.; Geller, Margaret J.; Hwang, Ho Seong; Silverman, John D.; Kashino, Daichi ASTROPHYSICAL JOURNAL 791(2), 130, AUG 20 2014
122	Restricted Weyl invariance in four-dimensional curved spacetime Edery, Ariel; Nakayama, Yu PHYSICAL REVIEW D 90(4), 43007, AUG 18 2014
123	Neutrino mass anarchy and the Universe Lu, Xiaochuan; Murayama, Hitoshi JOURNAL OF HIGH ENERGY PHYSICS (8), 101, AUG 18 2014
124	Primordial black holes from temporally enhanced curvature perturbation Suyama, Teruaki; Wu, Yi-Peng; Yokoyama, Jun'ichi PHYSICAL REVIEW D 90(4), 43514, AUG 15 2014
125	Affleck-Dine baryogenesis and dark matter production after high-scale inflation Harigaya, Keisuke; Kamada, Ayuki; Kawasaki, Masahiro; Mukaida, Kyohei; Yamada, Masaki PHYSICAL REVIEW D 90(4), 43510, AUG 12 2014
126	On-shell constrained M-2 variables with applications to mass measurements and topology disambiguation Cho, Won Sang; Gainer, James S.; Kim, Doojin; Matchev, Konstantin T.; Moortgat, Filip; Pape, Luc; Park, Myeonghun JOURNAL OF HIGH ENERGY PHYSICS (8), 70, AUG 11 2014
127	Prospect for a study of Randall-Sundrum models from Higgs bosons decay at future colliders Kubota, Hirohisa; Nojiri, Mihoko PHYSICAL REVIEW D 90(3), 35006, AUG 8 2014
128	Stellar origin of the Hf-182 cosmochronometer and the presolar history of solar system matter Lugaro, Maria; Heger, Alexander; Osrin, Dean; Goriely, Stephane; Zuber, Kai; Karakas, Amanda I.; Gibson, Brad K.; Doherty, Carolyn L.; Lattanzio, John C.; Ott, Ulrich SCIENCE 345(6197), pp.650-653, AUG 8 2014
129	Reheating the Universe Once More: The Dissipation of Acoustic Waves as a Novel Probe of Primordial Inhomogeneities on Even Smaller Scales Nakama, Tomohiro; Suyama, Teruaki; Yokoyama, Jun'ichi PHYSICAL REVIEW LETTERS 113(6), 61302, AUG 5 2014
130	Galileons coupled to massive gravity: general analysis and cosmological solutions Goon, Garrett; Guemruekcueoglu, A. Emir; Hinterbichler, Kurt; Mukohyama, Shinji; Trodden, Mark JOURNAL OF COSMOLOGY AND ASTROPARTICLE PHYSICS (8), 8, AUG 2014
131	Blue tensor spectrum from particle production during inflation Mukohyama, Shinji; Namba, Ryo; Peloso, Marco; Shiu, Gary JOURNAL OF COSMOLOGY AND ASTROPARTICLE PHYSICS (8), 36, AUG 2014
132	Spin-2 N Omega dibaryon from lattice QCD Etminan, Faisal; Nemura, Hidekatsu; Aoki, Sinya; Doi, Takumi; Hatsuda, Tetsuo; Ikeda, Yoichi; Inoue, Takashi; Ishii, Noriyoshi; Murano, Keiko; Sasaki, Kenji NUCLEAR PHYSICS A 928, pp.89-98, AUG 2014
133	Measuring the angular momentum distribution in core-collapse supernova progenitors with gravitational waves Abdikamalov, Ernazar; Gossan, Sarah; DeMaio, Alexandra M.; Ott, Christian D. PHYSICAL REVIEW D 90(4), 44001, AUG 1 2014



134	Affleck-Dine baryogenesis with R-parity violation Higaki, Tetsutaro; Nakayama, Kazunori; Saikawa, Ken'ichi; Takahashi, Tomo; Yamaguchi, Masahide PHYSICAL REVIEW D 90(4), 45001, AUG 1 2014
135	INDICATIONS OF INTERMEDIATE-SCALE ANISOTROPY OF COSMIC RAYS WITH ENERGY GREATER THAN 57 EeV IN THE NORTHERN SKY MEASURED WITH THE SURFACE DETECTOR OF THE TELESCOPE ARRAY EXPERIMENT Abbasi, R. U. et al. ASTROPHYSICAL JOURNAL LETTERS 790(2), L21, AUG 1 2014
136	CONSTRAINING PHYSICAL PROPERTIES OF TYPE II <sub>in</sub> SUPERNOVAE THROUGH RISE TIMES AND PEAK LUMINOSITIES Moriya, Takashi J.; Maeda, Keiichi ASTROPHYSICAL JOURNAL LETTERS 790(2), L16, AUG 1 2014
137	Large-scale environment of z similar to 5.7 C IV absorption systems - I. Projected distribution of galaxies Diaz, C. Gonzalo; Koyama, Yusei; Ryan-Weber, Emma V.; Cooke, Jeff; Ouchi, Masami; Shimasaku, Kazuhiro; Nakata, Fumiaki MONTHLY NOTICES OF THE ROYAL ASTRONOMICAL SOCIETY 442(2), pp.946-978, AUG 1 2014
138	Accurate renormalization group analyses in neutrino sector Haba, Naoyuki; Kaneta, Kunio; Takahashi, Ryo; Yamaguchi, Yuya NUCLEAR PHYSICS B 885, pp.180-195, AUG 2014
139	THE PHYSICAL CONDITIONS, METALLICITY AND METAL ABUNDANCE RATIOS IN A HIGHLY MAGNIFIED GALAXY AT z=3.6252 Bayliss, Matthew B.; Rigby, Jane R.; Sharon, Keren; Wuyts, Eva; Florian, Michael; Gladders, Michael D.; Johnson, Traci; Oguri, Masamune ASTROPHYSICAL JOURNAL 790(2), 144, AUG 1 2014
140	Q-Operator and Fusion Relations for U (q) (C ((2))(2)) Ip, Ivan Chi-Ho; Zeitlin, Anton M. LETTERS IN MATHEMATICAL PHYSICS 104(8), pp.1019-1043, AUG 2014
141	The 3.5 keV X-ray line signal from decaying moduli with low cutoff scale Nakayama, Kazunori; Takahashi, Fuminobu; Yanagida, Tsutomu T. PHYSICS LETTERS B 735, pp.338-339, JUL 30 2014
142	Measurement of the Branching Fraction B(Lambda(+)(c) -> pK(-)pi(+)) Zupanc, A. et al. PHYSICAL REVIEW LETTERS 113(4), 42002, JUL 25 2014
143	Testing the minimal direct gauge mediation at the LHC Hamaguchi, Koichi; Ibe, Masahiro; Yanagida, Tsutomu T.; Yokozaki, Norimi PHYSICAL REVIEW D 90(1), 15027, JUL 22 2014
144	High-scale SUSY breaking models in light of the BICEP2 result Harigaya, Keisuke; Ibe, Masahiro; Ichikawa, Koji; Kaneta, Kunio; Matsumoto, Shigeki JOURNAL OF HIGH ENERGY PHYSICS (7), 93, JUL 21 2014
145	Diffuse Ly alpha haloes around galaxies at z=2.2-6.6: implications for galaxy formation and cosmic reionization Momose, Rieko; Ouchi, Masami; Nakajima, Kimihiko; Ono, Yoshiaki; Shibuya, Takatoshi; Shimasaku, Kazuhiro; Yuma, Suraphong; Mori, Masao; Umemura, Masayuki MONTHLY NOTICES OF THE ROYAL ASTRONOMICAL SOCIETY 442(1), pp.110-120, JUL 21 2014

146	Star formation in the massive cluster merger Abell 2744 Rawle, T. D.; Altieri, B.; Egami, E.; Perez-Gonzalez, P. G.; Richard, J.; Santos, J. S.; Valtchanov, I.; Walth, G.; Bouy, H.; Haines, C. P.; Okabe, N. MONTHLY NOTICES OF THE ROYAL ASTRONOMICAL SOCIETY 442(1), pp.196-206, JUL 21 2014
147	Analytical model for non-thermal pressure in galaxy clusters Shi, Xun; Komatsu, Eiichiro MONTHLY NOTICES OF THE ROYAL ASTRONOMICAL SOCIETY 442(1), pp.521-532, JUL 21 2014
148	Ionization state of inter-stellar medium in galaxies: evolution, SFR-M <sup>*</sup> -Z dependence, and ionizing photon escape Nakajima, Kimihiko; Ouchi, Masami MONTHLY NOTICES OF THE ROYAL ASTRONOMICAL SOCIETY 442(1), pp.900-916, JUL 21 2014
149	THE INFLUENCE OF THERMAL PRESSURE ON EQUILIBRIUM MODELS OF HYPERMASSIVE NEUTRON STAR MERGER REMNANTS Kaplan, J. D.; Ott, C. D.; O'Connor, E. P.; Kiuchi, K.; Roberts, L.; Duez, M. ASTROPHYSICAL JOURNAL 790(1), 19, JUL 20 2014
150	Wino dark matter and future dSph observations Bhattacharjee, Biplob; Ibe, Masahiro; Ichikawa, Koji; Matsumoto, Shigeki; Nishiyama, Kohei JOURNAL OF HIGH ENERGY PHYSICS (7), 80, JUL 17 2014
151	Natural and multi-natural inflation in axion landscape Higaki, Tetsutaro; Takahashi, Fuminobu JOURNAL OF HIGH ENERGY PHYSICS (7), 74, JUL 16 2014
152	Mapping dark matter in the gamma-ray sky with galaxy catalogs Ando, Shin'ichiro; Benoit-Levy, Aurelien; Komatsu, Eiichiro PHYSICAL REVIEW D 90(2), 23514, JUL 10 2014
153	Thermodynamics of SU(3) gauge theory from gradient flow on the lattice Asakawa, Masayuki; Hatsuda, Tetsuo; Ito, Etsuko; Kitazawa, Masakiyo; Suzuki, Hiroshi PHYSICAL REVIEW D 90(1), 11501, JUL 9 2014
154	Measurement of the Cosmic Microwave Background Polarization Lensing Power Spectrum with the POLARBEAR Experiment Ade, P. A. R. et al. PHYSICAL REVIEW LETTERS 113(2), 21301, JUL 9 2014
155	Exact black hole solutions in shift symmetric scalar-tensor theories Kobayashi, Tsutomu; Tanahashi, Norihiro PROGRESS OF THEORETICAL AND EXPERIMENTAL PHYSICS (7), 073 E02, JUL 2014
156	Hybrid inflation in the complex plane Buchmueller, W.; Domcke, V.; Kamada, K.; Schmitz, K. JOURNAL OF COSMOLOGY AND ASTROPARTICLE PHYSICS (7), 54, JUL 2014
157	Non-Bunch-Davies statistical anisotropies Chen, Xingang; Wang, Yi JOURNAL OF COSMOLOGY AND ASTROPARTICLE PHYSICS (7), 4, JUL 2014
158	Topological inflation with large tensor-to-scalar ratio Chung, Yu-Chieh; Lin, Chunshan JOURNAL OF COSMOLOGY AND ASTROPARTICLE PHYSICS (7), 20, JUL 2014
159	I-ball formation with logarithmic potential Kawasaki, Masahiro; Takeda, Naoyuki JOURNAL OF COSMOLOGY AND ASTROPARTICLE PHYSICS (7), 38, JUL 2014

160	Self-interacting asymmetric dark matter coupled to a light massive dark photon Petraki, Kalliopi; Pearce, Lauren; Kusenko, Alexander JOURNAL OF COSMOLOGY AND ASTROPARTICLE PHYSICS (7), 39, JUL 2014
161	IPAC Image Processing and Data Archiving for the Palomar Transient Factory Laher, Russ R. et al. PUBLICATIONS OF THE ASTRONOMICAL SOCIETY OF THE PACIFIC 126(941), pp.674-710, JUL 2014
162	Joint analysis of cluster number counts and weak lensing power spectrum to correct for the super-sample covariance Takada, Masahiro; Spergel, David N. MONTHLY NOTICES OF THE ROYAL ASTRONOMICAL SOCIETY 441(3), pp.2456-2475, JUL 1 2014
163	Peccei-Quinn symmetric pure gravity mediation Evans, Jason L.; Ibe, Masahiro; Olive, Keith A.; Yanagida, Tsutomu T. EUROPEAN PHYSICAL JOURNAL C 74(7), 2931, JUL 1 2014
164	Discovery of large scale tensor mode and chaotic inflation in supergravity Harigaya, Keisuke; Yanagida, Tsutomu T. PHYSICS LETTERS B 734, pp.13-16, JUN 27 2014
165	Anomaly-free flavor models for Nambu-Goldstone bosons and the 3.5 keV X-ray line signal Nakayama, Kazunori; Takahashi, Fuminobu; Yanagida, Tsutomu T. PHYSICS LETTERS B 734, pp.178-182, JUN 27 2014
166	Five dimensional $O(N)$ -symmetric CFTs from conformal bootstrap Nakayama, Yu; Ohtsuki, Tomoki PHYSICS LETTERS B 734, pp.193-197, JUN 27 2014
167	Next to new minimal standard model Haba, Naoyuki; Kaneta, Kunio; Takahashi, Ryo PHYSICS LETTERS B 734, pp.220-226, JUN 27 2014
168	Weighing the light gravitino mass with weak lensing surveys Kamada, Ayuki; Shirasaki, Masato; Yoshida, Naoki JOURNAL OF HIGH ENERGY PHYSICS (6), 162, JUN 26 2014
169	Approaching the conformal window of $O(n) \times O(m)$ symmetric Landau-Ginzburg models using the conformal bootstrap Nakayama, Yu; Ohtsuki, Tomoki PHYSICAL REVIEW D 89(12), 126009, JUN 26 2014
170	Gaugino coannihilations Harigaya, Keisuke; Kaneta, Kunio; Matsumoto, Shigeki PHYSICAL REVIEW D 89(11), 115021, JUN 24 2014
171	INTERACTION-POWERED SUPERNOVAE: RISE-TIME VERSUS PEAK-LUMINOSITY CORRELATION AND THE SHOCK-BREAKOUT VELOCITY Ofek, Eran O.; Arcavi, Iair; Tal, David; Sullivan, Mark; Gal-Yam, Avishay; Kulkarni, Shrinivas R.; Nugent, Peter E.; Ben-Ami, Sagi; Bersier, David; Cao, Yi; Cenko, S. Bradley; De Cia, Annalisa; Filippenko, Alexei V.; Fransson, Claes; Kasliwal, Mansi M.; Laher, Russ; Surace, Jason; Quimby, Robert; Yaron, Ofer ASTROPHYSICAL JOURNAL 788(2), 154, JUN 20 2014
172	Revisiting the implications of CPT and unitarity for baryogenesis and leptogenesis Bhattacharya, Atri; Gandhi, Raj; Mukhopadhyay, Satyanarayan PHYSICAL REVIEW D 89(11), 116014, JUN 18 2014

173	Study of the baryonic R-parity violating MSSM using the jet substructure technique at the 14 TeV LHC Bhattacharjee, Biplob; Chakraborty, Amit PHYSICAL REVIEW D 89(11), 115016, JUN 16 2014
174	WHAT DO SIMULATIONS PREDICT FOR THE GALAXY STELLAR MASS FUNCTION AND ITS EVOLUTION IN DIFFERENT ENVIRONMENTS? Vulcani, Benedetta; De Lucia, Gabriella; Poggianti, Bianca M.; Bundy, Kevin; More, Surhud; Calvi, Rosa ASTROPHYSICAL JOURNAL 788(1), 57, JUN 10 2014
175	Improvement of energy-momentum tensor and non-Gaussianities in holographic cosmology Kawai, Shinsuke; Nakayama, Yu JOURNAL OF HIGH ENERGY PHYSICS (6), 52, JUN 10 2014
176	Global structure of conformal theories in the SU(3) gauge theory Ishikawa, K. -I.; Iwasaki, Y.; Nakayama, Yu; Yoshie, T. PHYSICAL REVIEW D 89(11), 114503, JUN 9 2014
177	Blowup solutions of Jang's equation near a spacetime singularity Aazami, Amir Babak; Cox, Graham CLASSICAL AND QUANTUM GRAVITY 31(11), 115007, JUN 7 2014
178	Multi-natural inflation Czerny, Michael; Takahashi, Fuminobu PHYSICS LETTERS B 733, pp.241-246, JUN 2 2014
179	Dynamical chaotic inflation in the light of BICEP2 Harigaya, Keisuke; Ibe, Masahiro; Schmitz, Kai; Yanagida, Tsutomu T. PHYSICS LETTERS B 733, pp.283-287, JUN 2 2014
180	Complexified Starobinsky inflation in supergravity in the light of recent BICEP2 result Hamaguchi, Koichi; Moroi, Takeo; Terada, Takahiro PHYSICS LETTERS B 733, pp.305-308, JUN 2 2014
181	An updated analysis of Inert Higgs Doublet Model in light of the recent results from LUX, PLANCK, AMS-02 and LHC Arhrib, Abdesslam; Tsai, Yue-Lin Sming; Yuan, Qiang; Yuan, Tzu-Chiang JOURNAL OF COSMOLOGY AND ASTROPARTICLE PHYSICS (6), 30, JUN 2014
182	Viable cosmology in bimetric theory De Felice, Antonio; Guemruekcueoglu, A. Emir; Mukohyama, Shinji; Tanahashi, Norihiro; Tanaka, Takahiro JOURNAL OF COSMOLOGY AND ASTROPARTICLE PHYSICS (6), 37, JUN 2014
183	The modular group for the total ancestor potential of Fermat simple elliptic singularities Milanov, Todor; Shen, Yefeng COMMUNICATIONS IN NUMBER THEORY AND PHYSICS 8(2), pp.329-368, JUN 2014
184	Minimal fine tuning in supersymmetric Higgs inflation Imai, Takumi; Izawa, K. -I PROGRESS OF THEORETICAL AND EXPERIMENTAL PHYSICS (6), 063B01, JUN 2014
185	Results from the Wilkinson Microwave Anisotropy Probe Komatsu, Eiichiro; Bennett, Charles L. PROGRESS OF THEORETICAL AND EXPERIMENTAL PHYSICS (6), 06B102, JUN 2014
186	The Dark Ages of the Universe and hydrogen reionization Natarajan, Aravind; Yoshida, Naoki PROGRESS OF THEORETICAL AND EXPERIMENTAL PHYSICS (6), 06B112, JUN 2014

187	The integrated Sachs-Wolfe effect and the Rees-Sciama effect Nishizawa, Atsushi J. PROGRESS OF THEORETICAL AND EXPERIMENTAL PHYSICS (6), 06B110, JUN 2014
188	Search for inelastic WIMP nucleus scattering on Xe-129 in data from the XMASS-I experiment Uchida, H. et al. PROGRESS OF THEORETICAL AND EXPERIMENTAL PHYSICS (6), 063C01, JUN 2014
189	Inflation: 1980-201X Yokoyama, Jun'ichi PROGRESS OF THEORETICAL AND EXPERIMENTAL PHYSICS (6), 06B103, JUN 2014
190	GRB 120422A/SN 2012bz: Bridging the gap between low- and high-luminosity gamma-ray bursts Schulze, S. et al. ASTRONOMY & ASTROPHYSICS 566, A102, JUN 2014
191	DUST PRODUCTION FACTORIES IN THE EARLY UNIVERSE: FORMATION OF CARBON GRAINS IN RED-SUPERGIANT WINDS OF VERY MASSIVE POPULATION III STARS Nozawa, Takaya; Yoon, Sung-Chul; Maeda, Keiichi; Kozasa, Takashi; Nomoto, Ken'ichi; Langer, Norbert ASTROPHYSICAL JOURNAL LETTERS 787(2), L17, JUN 1 2014
192	Galaxy And Mass Assembly (GAMA): the wavelength-dependent sizes and profiles of galaxies revealed by MegaMorph Vulcani, Benedetta; Bamford, Steven P.; Haeussler, Boris; Vika, Marina; Rojas, Alex; Agius, Nicola K.; Baldry, Ivan; Bauer, Amanda E.; Brown, Michael J. I.; Driver, Simon; Graham, Alister W.; Kelvin, Lee S.; Liske, Jochen; Loveday, Jon; Popescu, Cristina C.; Robotham, Aaron S. G.; Tuffs, Richard J. MONTHLY NOTICES OF THE ROYAL ASTRONOMICAL SOCIETY 441(2), pp.1340-1362, JUN 2014
193	The clustering of galaxies in the SDSS-III Baryon Oscillation Spectroscopic Survey: baryon acoustic oscillations in the Data Releases 10 and 11 Galaxy samples Anderson, Lauren et al. MONTHLY NOTICES OF THE ROYAL ASTRONOMICAL SOCIETY 441(1), pp.24-62, JUN 2014
194	Statistical properties of filaments in weak gravitational lensing Higuchi, Yuichi; Oguri, Masamune; Shirasaki, Masato MONTHLY NOTICES OF THE ROYAL ASTRONOMICAL SOCIETY 441(1), pp.745-756, JUN 2014
195	CLASSIFICATION OF FINITE-MULTIPLICITY SYMMETRIC PAIRS Kobayashi, T.; Matsuki, T. TRANSFORMATION GROUPS 19(2), pp.457-493, JUN 2014
196	Measurement of $D^0$ - $(D)$ over $\bar{D}^0$ mixing and search for indirect CP violation using $D^0 \rightarrow K^+ S^0 \pi^+ \pi^-$ decays Peng, T. et al. PHYSICAL REVIEW D 89(9), 91103, MAY 30 2014
197	Search for CP Violation in $D^0 \rightarrow \pi^0 \pi^0$ Decays Nisar, N. K. et al. PHYSICAL REVIEW LETTERS 112(21), 211601, MAY 29 2014
198	Baryogenesis from the gauge-mediation type Q-ball and the new type of Q-ball as the dark matter Kasuya, Shinta; Kawasaki, Masahiro PHYSICAL REVIEW D 89(10), 103534, MAY 28 2014

199	Measurements of the masses and widths of the $\Sigma_c(2455)0^{++}$ and $\Sigma_c(2520)0^{++}$ baryons Lee, S. -H. et al. PHYSICAL REVIEW D 89(9), 91102, MAY 22 2014
200	Emergent Lorentz signature, fermions, and the standard model Kehayias, John; Mukohyama, Shinji; Uzan, Jean-Philippe PHYSICAL REVIEW D 89(10), 105017, MAY 20 2014
201	Isospin-violating dark matter with colored mediators Hamaguchi, Koichi; Liew, Seng Pei; Moroi, Takeo; Yamamoto, Yasuhiro JOURNAL OF HIGH ENERGY PHYSICS (5), 86, MAY 20 2014
202	Angular momentum generation by parity violation Liu, Hong; Ooguri, Hiroshi; Stoica, Bogdan PHYSICAL REVIEW D 89(10), 106007, MAY 19 2014
203	Gravity-mediated (or composite) Dark Matter confronts astrophysical data Lee, Hyun Min; Park, Myeonghun; Sanz, Veronica JOURNAL OF HIGH ENERGY PHYSICS (5), 63, MAY 15 2014
204	Noncommuting Momenta of Topological Solitons Watanabe, Haruki; Murayama, Hitoshi PHYSICAL REVIEW LETTERS 112(19), 191804, MAY 15 2014
205	Natural Higgs Mass in Supersymmetry from Nondecoupling Effects Lu, Xiaochuan; Murayama, Hitoshi; Ruderman, Joshua T.; Tobioka, Kohsaku PHYSICAL REVIEW LETTERS 112(19), 191803, MAY 14 2014
206	REDUCING SYSTEMATIC ERROR IN WEAK LENSING CLUSTER SURVEYS Utsumi, Yousuke; Miyazaki, Satoshi; Geller, Margaret J.; Dell'Antonio, Ian P.; Oguri, Masamune; Kurtz, Michael J.; Hamana, Takashi; Fabricant, Daniel G. ASTROPHYSICAL JOURNAL 786(2), 93, MAY 10 2014
207	Precise Measurement of the Neutrino Mixing Parameter $\theta_{23}$ from Muon Neutrino Disappearance in an Off-Axis Beam Abe, K. et al. PHYSICAL REVIEW LETTERS 112(18), 181801, MAY 8 2014
208	CP violation in $B \rightarrow D \tau \nu(\tau)$ using multipion $\tau$ decays Hagiwara, Kaoru; Nojiri, Mihoko M.; Sakaki, Yasuhito PHYSICAL REVIEW D 89(9), 94009, MAY 8 2014
209	Measurement of the intrinsic electron neutrino component in the T2K neutrino beam with the ND280 detector Abe, K. et al. PHYSICAL REVIEW D 89(9), 92003, MAY 5 2014
210	Thermalization after/during reheating Harigaya, Keisuke; Mukaida, Kyohei JOURNAL OF HIGH ENERGY PHYSICS (5), 6, MAY 5 2014
211	Position-dependent power spectrum of the large-scale structure: a novel method to measure the squeezed-limit bispectrum Chiang, Chi-Ting; Wagner, Christian; Schmidt, Fabian; Komatsu, Eiichiro JOURNAL OF COSMOLOGY AND ASTROPARTICLE PHYSICS (5), 48, MAY 2014
212	THE THIRD GRAVITATIONAL LENSING ACCURACY TESTING (GREAT3) CHALLENGE HANDBOOK Mandelbaum, Rachel et al. ASTROPHYSICAL JOURNAL SUPPLEMENT SERIES 212(1), 5, MAY 2014

213	Understanding the spectrum of a distant blazar PKS 1424+240 and its implications Essey, Warren; Kusenko, Alexander ASTROPARTICLE PHYSICS 57-58, pp.30-32, MAY-JUN 2014
214	Observational properties of low-redshift pair instability supernovae Kozyreva, A.; Blinnikov, S.; Langer, N.; Yoon, S. -C. ASTRONOMY & ASTROPHYSICS 565, A70, MAY 2014
215	Peculiar velocities in redshift space: formalism, N-body simulations and perturbation theory Okumura, Teppei; Seljak, Uros; Vlah, Zvonimir; Desjacques, Vincent JOURNAL OF COSMOLOGY AND ASTROPARTICLE PHYSICS (5), 3, MAY 2014
216	THE MOVING GROUP TARGETS OF THE SEEDS HIGH-CONTRAST IMAGING SURVEY OF EXOPLANETS AND DISKS: RESULTS AND OBSERVATIONS FROM THE FIRST THREE YEARS Brandt, Timothy D. et al. ASTROPHYSICAL JOURNAL 786(1), 1, MAY 1 2014
217	STATISTICAL AND SYSTEMATIC ERRORS IN THE MEASUREMENT OF WEAK-LENSING MINKOWSKI FUNCTIONALS: APPLICATION TO THE CANADA-FRANCE-HAWAII LENSING SURVEY Shirasaki, Masato; Yoshida, Naoki ASTROPHYSICAL JOURNAL 786(1), 43, MAY 1 2014
219	Coset Constructions of Logarithmic $(1, p)$ Models Creutzig, Thomas; Ridout, David; Wood, Simon LETTERS IN MATHEMATICAL PHYSICS 104(5), pp.553-583, MAY 2014
220	Baryon asymmetry, dark matter, and density perturbation from primordial black holes Fujita, Tomohiro; Harigaya, Keisuke; Kawasaki, Masahiro; Matsuda, Ryo PHYSICAL REVIEW D 89(10), 103501, MAY 1 2014
221	Nambu-Goldstone bosons with fractional-power dispersion relations Watanabe, Haruki; Murayama, Hitoshi PHYSICAL REVIEW D 89(10), 101701, MAY 1 2014
222	The brief era of direct collapse black hole formation Yue, Bin; Ferrara, Andrea; Salvaterra, Ruben; Xu, Yidong; Chen, Xuelei MONTHLY NOTICES OF THE ROYAL ASTRONOMICAL SOCIETY 440(2), pp.1263-1273, MAY 2014
223	Type II Plateau supernovae as metallicity probes of the Universe Dessart, L.; Gutierrez, C. P.; Hamuy, M.; Hillier, D. J.; Lanz, T.; Anderson, J. P.; Folatelli, G.; Freedman, W. L.; Ley, F.; Morrell, N.; Persson, S. E.; Phillips, M. M.; Stritzinger, M.; Suntzeff, N. B. MONTHLY NOTICES OF THE ROYAL ASTRONOMICAL SOCIETY 440(2), pp.1856-1864, MAY 2014
224	Evolution of extinction curves in galaxies Asano, Ryosuke S.; Takeuchi, Tsutomu T.; Hirashita, Hiroyuki; Nozawa, Takaya MONTHLY NOTICES OF THE ROYAL ASTRONOMICAL SOCIETY 440(1), pp.134-142, MAY 2014
225	Detection of the Gravitational Lens Magnifying a Type Ia Supernova Quimby, Robert M.; Oguri, Masamune; More, Anupreeta; More, Surhud; Moriya, Takashi J.; Werner, Marcus C.; Tanaka, Masayuki; Folatelli, Gaston; Bersten, Melina C.; Maeda, Keiichi; Nomoto, Ken'ichi SCIENCE 344(6182), pp.396-399, APR 25 2014
226	Langevin description of gauged scalar fields in a thermal bath Miyamoto, Yuhei; Motohashi, Hayato; Suyama, Teruaki; Yokoyama, Jun'ichi PHYSICAL REVIEW D 89(8), 85037, APR 24 2014

227	Dark matter production in late time reheating Harigaya, Keisuke; Kawasaki, Masahiro; Mukaida, Kyohei; Yamada, Masaki PHYSICAL REVIEW D 89(8), 83532, APR 23 2014
228	ABUNDANCE PROFILING OF EXTREMELY METAL-POOR STARS AND SUPERNOVA PROPERTIES IN THE EARLY UNIVERSE Tominaga, Nozomu; Iwamoto, Nobuyuki; Nomoto, Ken'ichi ASTROPHYSICAL JOURNAL 785(2), 98, APR 20 2014
229	THE MASS-INDEPENDENCE OF SPECIFIC STAR FORMATION RATES IN GALACTIC DISKS Abramson, Louis E.; Kelson, Daniel D.; Dressler, Alan; Poggianti, Bianca; Gladders, Michael D.; Oemler, Augustus, Jr.; Vulcani, Benedetta ASTROPHYSICAL JOURNAL LETTERS 785(2), L36, APR 20 2014
230	MAGNETOROTATIONAL CORE-COLLAPSE SUPERNOVAE IN THREE DIMENSIONS Moesta, Philipp; Richers, Sherwood; Ott, Christian D.; Haas, Roland; Piro, Anthony L.; Boydston, Kristen; Abdikamalov, Ernazar; Reisswig, Christian; Schnetter, Erik ASTROPHYSICAL JOURNAL LETTERS 785(2), L29, APR 20 2014
231	Dynamical meson melting in holography Ishii, Takaaki; Kinoshita, Shunichiro; Murata, Keiju; Tanahashi, Norihiro JOURNAL OF HIGH ENERGY PHYSICS (4), 99, APR 14 2014
232	A no-go theorem for generalized vector Galileons on flat spacetime Deffayet, Cedric; Guemruekcueoglu, A. Emir; Mukohyama, Shinji; Wang, Yi JOURNAL OF HIGH ENERGY PHYSICS (4), 82, APR 11 2014
233	Kaluza-Klein towers on general manifolds Hinterbichler, Kurt; Levin, Janna; Zukowski, Claire PHYSICAL REVIEW D 89(8), 86007, APR 11 2014
234	THE ORIGIN OF LOW $[\alpha/\text{Fe}]$ RATIOS IN EXTREMELY METAL-POOR STARS Kobayashi, Chiaki; Ishigaki, Miho N.; Tominaga, Nozomu; Nomoto, Ken'ichi ASTROPHYSICAL JOURNAL LETTERS 785(1), L5, APR 10 2014
235	Super-sample covariance in simulations Li, Yin; Hu, Wayne; Takada, Masahiro PHYSICAL REVIEW D 89(8), 83519, APR 8 2014
236	Study of $B^0 \rightarrow \rho(0)\rho(0)$ decays, implications for the CKM angle $\phi(2)$ and search for other $B^0$ decay modes with a four-pion final state Vanhoefler, P. et al. PHYSICAL REVIEW D 89(7), 72008, APR 8 2014
237	Analytical approximation of the neutrino oscillation matter effects at large $\theta_{13}$ Agarwalla, Sanjib Kumar; Kao, Yee; Takeuchi, Tatsu JOURNAL OF HIGH ENERGY PHYSICS (4), 47, APR 7 2014
238	Planck scale boundary conditions in the standard model with singlet scalar dark matter Haba, Naoyuki; Kaneta, Kunio; Takahashi, Ryo JOURNAL OF HIGH ENERGY PHYSICS (4), 29, APR 4 2014
239	Post-Newtonian approximations in the Horava-Lifshitz gravity with extra $U(1)$ symmetry Lin, Kai; Mukohyama, Shinji; Wang, Anzhong; Zhu, Tao PHYSICAL REVIEW D 89(8), 84022, APR 4 2014
240	Search for Dinucleon Decay into Kaons in Super-Kamiokande Litos, M. et al. PHYSICAL REVIEW LETTERS 112(13), 131803, APR 4 2014



241	Charge quantization and the Standard Model from the CP2 and CP3 nonlinear sigma-models Hellerman, Simeon; Kehayias, John; Yanagida, Tsutomu T. PHYSICS LETTERS B 731, pp.148-153, APR 4 2014
242	Evidence for Gravitational Lensing of the Cosmic Microwave Background Polarization from Cross-Correlation with the Cosmic Infrared Background Ade, P. A. R. et al. PHYSICAL REVIEW LETTERS 112(13), 131302, APR 2 2014
243	A study of selection methods for H alpha-emitting galaxies at z similar to 1.3 for the Subaru/FMOS galaxy redshift survey for cosmology (FastSound) Tonegawa, Motonari; Totani, Tomonori; Akiyama, Masayuki; Dalton, Gavin; Glazebrook, Karl; Iwamuro, Fumihide; Sumiyoshi, Masanao; Tamura, Naoyuki; Yabe, Kiyoto; Coupon, Jean; Goto, Tomotsugu; Spitler, Lee R. PUBLICATIONS OF THE ASTRONOMICAL SOCIETY OF JAPAN 66(2), 43, APR 2014
244	Measurement of branching fractions for $B \rightarrow J/\psi \eta K$ decays and search for a narrow resonance in the $J/\psi \eta$ final state Iwashita, T. et al. PROGRESS OF THEORETICAL AND EXPERIMENTAL PHYSICS (4), 043C01, APR 2014
245	Fermionic functional renormalization group approach to superfluid phase transition Tanizaki, Yuya; Fejos, Gergely; Hatsuda, Tetsuo PROGRESS OF THEORETICAL AND EXPERIMENTAL PHYSICS (4), 043I01, APR 2014
246	SUBARU WEAK-LENSING SURVEY OF DARK MATTER SUBHALOS IN THE COMA CLUSTER: SUBHALO MASS FUNCTION AND STATISTICAL PROPERTIES Okabe, Nobuhiro; Futamase, Toshifumi; Kajisawa, Masaru; Kuroshima, Risa ASTROPHYSICAL JOURNAL 784(2), 90, APR 1 2014
247	SN 2011hs: a fast and faint Type Iib supernova from a supergiant progenitor Bufano, F. et al. MONTHLY NOTICES OF THE ROYAL ASTRONOMICAL SOCIETY 439(2), pp.1807-1828, APR 2014
248	The stellar and dark matter distributions in elliptical galaxies from the ensemble of strong gravitational lenses Oguri, Masamune; Rusu, Cristian E.; Falco, Emilio E. MONTHLY NOTICES OF THE ROYAL ASTRONOMICAL SOCIETY 439(3), pp.2494-2504, APR 2014
249	Simultaneous constraints on the growth of structure and cosmic expansion from the multipole power spectra of the SDSS DR7 LRG sample Oka, Akira; Saito, Shun; Nishimichi, Takahiro; Taruya, Atsushi; Yamamoto, Kazuhiro MONTHLY NOTICES OF THE ROYAL ASTRONOMICAL SOCIETY 439(3), pp.2515-2530, APR 2014
250	The clustering of Galaxies in the SDSS-III Baryon Oscillation Spectroscopic Survey: including covariance matrix errors Percival, Will J. et al. MONTHLY NOTICES OF THE ROYAL ASTRONOMICAL SOCIETY 439(3), pp.2531-2541, APR 2014
251	Low luminosity Type II supernovae - II. Pointing towards moderate mass precursors Spiro, S. et al. MONTHLY NOTICES OF THE ROYAL ASTRONOMICAL SOCIETY 439(3), pp.2873-2892, APR 2014

252	Mass-loss histories of Type II supernova progenitors within decades before their explosion Moriya, Takashi J.; Maeda, Keiichi; Taddia, Francesco; Sollerman, Jesper; Blinnikov, Sergei I.; Sorokina, Elena I. MONTHLY NOTICES OF THE ROYAL ASTRONOMICAL SOCIETY 439(3), pp.2917-2926, APR 2014
253	Dust grain growth and the formation of the extremely primitive star SDSS J102915+172927 Chiaki, Gen; Schneider, Raffaella; Nozawa, Takaya; Omukai, Kazuyuki; Limongi, Marco; Yoshida, Naoki; Chieffi, Alessandro MONTHLY NOTICES OF THE ROYAL ASTRONOMICAL SOCIETY 439(3), pp.3121-3127, APR 2014
254	The large-scale distribution of cool gas around luminous red galaxies Zhu, Guangtun; Menard, Brice; Bizyaev, Dmitry; Brewington, Howard; Ebelke, Garrett; Ho, Shirley; Kinemuchi, Karen; Malanushenko, Viktor; Malanushenko, Elena; Marchante, Moses; More, Surhud; Oravetz, Daniel; Pan, Kaike; Petitjean, Patrick; Simmons, Audrey MONTHLY NOTICES OF THE ROYAL ASTRONOMICAL SOCIETY 439(3), pp.3139-3155, APR 2014
255	Analyticity of the total ancestor potential in singularity theory Milanov, Todor ADVANCES IN MATHEMATICS 255, pp.217-241, APR 1 2014
256	WINGS Data Release: a database of galaxies in nearby clusters Moretti, A.; Poggianti, B. M.; Fasano, G.; Bettoni, D.; D'Onofrio, M.; Fritz, J.; Cava, A.; Varela, J.; Vulcani, B.; Guilleuszik, M.; Couch, W. J.; Omizzolo, A.; Valentinuzzi, T.; Dressler, A.; Moles, M.; Kjaergaard, P.; Smareglia, R.; Molinaro, M. ASTRONOMY & ASTROPHYSICS 564, A138, APR 2014
257	THE TENTH DATA RELEASE OF THE SLOAN DIGITAL SKY SURVEY: FIRST SPECTROSCOPIC DATA FROM THE SDSS-III APACHE POINT OBSERVATORY GALACTIC EVOLUTION EXPERIMENT Ahn, Christopher P. et al. ASTROPHYSICAL JOURNAL SUPPLEMENT SERIES 211(2), 17, APR 2014
258	Dark decay of the top quark Kong, Kyoungchul; Lee, Hye-Sung; Park, Myeonghun PHYSICAL REVIEW D 89(7), 74007, APR 1 2014
259	Dark matter implications of Fermi-LAT measurement of anisotropies in the diffuse gamma-ray background Gomez-Vargas, G. A.; Cuoco, A.; Linden, T.; Sanchez-Conde, M. A.; Siegal-Gaskins, J. M.; Delahaye, T.; Fornasa, M.; Komatsu, E.; Prada, F.; Zavala, J. NUCLEAR INSTRUMENTS & METHODS IN PHYSICS RESEARCH SECTION A-ACCELERATORS SPECTROMETERS DETECTORS AND ASSOCIATED EQUIPMENT 742, pp.149-153, APR 1 2014
260	GRADED CARTAN DETERMINANTS OF THE SYMMETRIC GROUPS Tsuchioka, Shunsuke TRANSACTIONS OF THE AMERICAN MATHEMATICAL SOCIETY 366(4), pp.2019-2040, APR 2014
261	Muon g-2 and LHC phenomenology in the L-mu-L-tau gauge symmetric model Harigaya, Keisuke; Igari, Takafumi; Nojiri, Mihoko M.; Takeuchi, Michihisa; Tobe, Kazuhiro JOURNAL OF HIGH ENERGY PHYSICS (3), 105, MAR 24 2014
262	Higher dimensional operators and the LHC Higgs data: The role of modified kinematics Banerjee, Shankha; Mukhopadhyay, Satyanarayan; Mukhopadhyaya, Biswarup PHYSICAL REVIEW D 89(5), 53010, MAR 18 2014

263	Lower bound on the gravitino mass $m(3/2) > O(100)$ TeV in R-symmetry breaking new inflation Harigaya, Keisuke; Ibe, Masahiro; Yanagida, Tsutomu T. PHYSICAL REVIEW D 89(5), 55014, MAR 17 2014
264	Observation of D-0-(D)over-bar(0) Mixing in e(+) e(-) Collisions Ko, B. R. et al. PHYSICAL REVIEW LETTERS 112(11), 111801, MAR 17 2014
265	Hypercharged Dark Matter and Direct Detection as a Probe of Reheating Feldstein, Brian; Ibe, Masahiro; Yanagida, Tsutomu T. PHYSICAL REVIEW LETTERS 112(10), 101301, MAR 10 2014
266	Chaotic inflation with right-handed sneutrinos after Planck Nakayama, Kazunori; Takahashi, Fuminobu; Yanagida, Tsutomu T. PHYSICS LETTERS B 730, pp.24-29, MAR 7 2014
267	Universal physics of three bosons with isospin Hyodo, Tetsuo; Hatsuda, Tetsuo; Nishida, Yusuke PHYSICAL REVIEW C 89(3), 32201, MAR 7 2014
268	First Indication of Terrestrial Matter Effects on Solar Neutrino Oscillation Renshaw, A. et al. PHYSICAL REVIEW LETTERS 112(9), 91805, MAR 7 2014
269	LINE-OF-SIGHT STRUCTURE TOWARD STRONG LENSING GALAXY CLUSTERS Bayliss, Matthew B.; Johnson, Traci; Gladders, Michael D.; Sharon, Keren; Oguri, Masamune ASTROPHYSICAL JOURNAL 783(1), 41, MAR 1 2014
270	STATISTICAL PROPERTIES OF MULTI-EPOCH SPECTRAL VARIABILITY OF SDSS STRIPE 82 QUASARS Kokubo, Mitsuru; Morokuma, Tomoki; Minezaki, Takeo; Doi, Mamoru; Kawaguchi, Toshihiro; Sameshima, Hiroaki; Koshida, Shintaro ASTROPHYSICAL JOURNAL 783(1), 46, MAR 1 2014
271	Cosmological signatures of tilted isocurvature perturbations: reionization and 21cm fluctuations Sekiguchi, Toyokazu; Tashiro, Hiroyuki; Silk, Joseph; Sugiyama, Naoshi JOURNAL OF COSMOLOGY AND ASTROPARTICLE PHYSICS (3), 1, MAR 2014
272	Cosmology with massive neutrinos I: towards a realistic modeling of the relation between matter, haloes and galaxies Villaescusa-Navarro, Francisco; Marulli, Federico; Viel, Matteo; Branchini, Enzo; Castorina, Emanuele; Sefusatti, Emiliano; Saito, Shun JOURNAL OF COSMOLOGY AND ASTROPARTICLE PHYSICS (3), 11, MAR 2014
273	Is there supercurvature mode of massive vector field in open inflation? Yamauchi, Daisuke; Fujita, Tomohiro; Mukohyama, Shinji JOURNAL OF COSMOLOGY AND ASTROPARTICLE PHYSICS (3), 31, MAR 2014
274	Type Ib SN 1999dn as an example of the thoroughly mixed ejecta of Ib supernovae Cano, Zach; Maeda, Keiichi; Schulze, Steve MONTHLY NOTICES OF THE ROYAL ASTRONOMICAL SOCIETY 438(4), pp.2924-2937, MAR 2014
275	Accounting for selection effects in the BH-bulge relations: no evidence for cosmological evolution Schulze, Andreas; Wisotzki, Lutz MONTHLY NOTICES OF THE ROYAL ASTRONOMICAL SOCIETY 438(4), pp.3422-3433, MAR 2014

276	F-method for symmetry breaking operators Kobayashi, Toshiyuki DIFFERENTIAL GEOMETRY AND ITS APPLICATIONS 33, pp.272-289, MAR 2014
277	Halo/galaxy bispectrum with primordial non-Gaussianity from integrated perturbation theory Yokoyama, Shuichiro; Matsubara, Takahiko; Taruya, Atsushi PHYSICAL REVIEW D 89(4), 43524, FEB 27 2014
278	One-loop anomaly mediated scalar masses and $(g-2)(\mu)$ in pure gravity mediation Evans, Jason L.; Ibe, Masahiro; Olive, Keith A.; Yanagida, Tsutomu T. EUROPEAN PHYSICAL JOURNAL C 74(2), 2775, FEB 25 2014
279	THROUGH THE LOOKING GLASS: HST SPECTROSCOPY OF FAINT GALAXIES LENSED BY THE FRONTIER FIELDS CLUSTER MACSJ0717.5+3745 Schmidt, K. B. et al. ASTROPHYSICAL JOURNAL LETTERS 782(2), L36, FEB 20 2014
280	Compressed supersymmetry at 14 TeV LHC Bhattacharjee, Biplob; Choudhury, Arghya; Ghosh, Kirtiman; Poddar, Sujoy PHYSICAL REVIEW D 89(3), 37702, FEB 19 2014
281	Electroweak baryogenesis in the MSSM with vectorlike superfields Chang, Xue; Huo, Ran PHYSICAL REVIEW D 89(3), 36005, FEB 14 2014
282	Beyond consistency test of gravity with redshift-space distortions at quasilinear scales Taruya, Atsushi; Koyama, Kazuya; Hiramatsu, Takashi; Oka, Akira PHYSICAL REVIEW D 89(4), 43509, FEB 13 2014
283	Calibration of the Super-Kamiokande detector Abe, K. et al. NUCLEAR INSTRUMENTS & METHODS IN PHYSICS RESEARCH SECTION A-ACCELERATORS SPECTROMETERS DETECTORS AND ASSOCIATED EQUIPMENT 737, pp.253-272, FEB 11 2014
284	Observation of Electron Neutrino Appearance in a Muon Neutrino Beam Abe, K. et al. PHYSICAL REVIEW LETTERS 112(6), 61802, FEB 10 2014
285	INTERACTION BETWEEN THE BROAD-LINED TYPE Ic SUPERNOVA 2012ap AND CARRIERS OF DIFFUSE INTERSTELLAR BANDS Milisavljevic, Dan et al. ASTROPHYSICAL JOURNAL LETTERS 782(1), L5, FEB 10 2014
286	Charmed tetraquarks T-CC and T-CS from dynamical lattice QCD simulations Ikeda, Yoichi; Charron, Bruno; Aoki, Sinya; Doi, Takumi; Hatsuda, Tetsuo; Inoue, Takashi; Ishii, Noriyoshi; Murano, Keiko; Nemura, Hidekatsu; Sasaki, Kenji PHYSICS LETTERS B 729, pp.85-90, FEB 5 2014
288	Optical and near-infrared observations of SN 2011dh-The first 100 days Ergon, M. et al. ASTRONOMY & ASTROPHYSICS 562, A17, FEB 2014
289	Chemical compositions of six metal-poor stars in the ultra-faint dwarf spheroidal galaxy Bootes I Ishigaki, M. N.; Aoki, W.; Arimoto, N.; Okamoto, S. ASTRONOMY & ASTROPHYSICS 562, A146, FEB 2014
290	Prospects for future very high-energy gamma-ray sky survey: Impact of secondary gamma rays Inoue, Yoshiyuki; Kalashev, Oleg E.; Kusenko, Alexander ASTROPARTICLE PHYSICS 54, pp.118-124, FEB 2014

291	Decay rates of Gaussian-type I-balls and Bose-enhancement effects in 3+1 dimensions Kawasaki, Masahiro; Yamada, Masaki JOURNAL OF COSMOLOGY AND ASTROPARTICLE PHYSICS (2), 1, FEB 2014
292	ONE HUNDRED FIRST STARS: PROTOSTELLAR EVOLUTION AND THE FINAL MASSES Hirano, Shingo; Hosokawa, Takashi; Yoshida, Naoki; Umeda, Hideyuki; Omukai, Kazuyuki; Chiaki, Gen; Yorke, Harold W. ASTROPHYSICAL JOURNAL 781(2), 60, FEB 1 2014
293	Intertwining operators and the restriction of representations of rank-one orthogonal groups Kobayashi, Toshiyuki; Speh, Birgit COMPTES RENDUS MATHEMATIQUE 352(2), pp.89-94, FEB 2014
294	New Integrable Models from the Gauge/YBE Correspondence Yamazaki, Masahito JOURNAL OF STATISTICAL PHYSICS 154(3), pp.895-911, FEB 2014
295	Effects of baryon removal on the structure of dwarf spheroidal galaxies Arraki, Kenza S.; Klypin, Anatoly; More, Surhud; Trujillo-Gomez, Sebastian MONTHLY NOTICES OF THE ROYAL ASTRONOMICAL SOCIETY 438(2), pp.1466-1482, FEB 2014
296	On de Sitter geometry in cosmic void statistics Gibbons, G. W.; Werner, M. C.; Yoshida, N.; Chon, S. MONTHLY NOTICES OF THE ROYAL ASTRONOMICAL SOCIETY 438(2), pp.1603-1610, FEB 2014
297	Two-Sphere Partition Functions and Gromov-Witten Invariants Jockers, Hans; Kumar, Vijay; Lapan, Joshua M.; Morrison, David R.; Romo, Mauricio COMMUNICATIONS IN MATHEMATICAL PHYSICS 325(3), pp.1139-1170, FEB 2014
298	10 GeV neutralino dark matter and light stau in the MSSM Hagiwara, Kaoru; Mukhopadhyay, Satyanarayan; Nakamura, Junya PHYSICAL REVIEW D 89(1), 15023, JAN 29 2014
299	NNMSM type-II and -III Haba, Naoyuki; Kaneta, Kunio; Takahashi, Ryo EUROPEAN PHYSICAL JOURNAL C 74(1), 2696, JAN 24 2014
300	Reconstructing supersymmetric contribution to muon anomalous magnetic dipole moment at ILC Endo, Motoi; Hamaguchi, Koichi; Iwamoto, Sho; Kitahara, Teppei; Moroi, Takeo PHYSICS LETTERS B 728, pp.274-281, JAN 20 2014
301	Lepton-flavor violations in high-scale SUSY with right-handed neutrinos Moroi, Takeo; Nagai, Minoru; Yanagida, Tsutomu T. PHYSICS LETTERS B 728, pp.342-346, JAN 20 2014
302	Charge quantization in the CP(1) nonlinear sigma-model Hellerman, Simeon; Kehayias, John; Yanagida, Tsutomu T. PHYSICS LETTERS B 728, pp.358-362, JAN 20 2014
303	Towards consistent extension of quasilaton massive gravity De Felice, Antonio; Mukohyama, Shinji PHYSICS LETTERS B 728, pp.622-625, JAN 20 2014
304	Gauge invariant Barr-Zee type contributions to fermionic EDMs in the two-Higgs doublet models Abe, Tomohiro; Hisano, Junji; Kitahara, Teppei; Tobioka, Kohsaku JOURNAL OF HIGH ENERGY PHYSICS (1), 106, JAN 20 2014

305	SN 2005ip: A LUMINOUS TYPE II <sub>n</sub> SUPERNOVA EMERGING FROM A DENSE CIRCUMSTELLAR MEDIUM AS REVEALED BY X-RAY OBSERVATIONS Katsuda, Satoru; Maeda, Keiichi; Nozawa, Takaya; Pooley, David; Immler, Stefan ASTROPHYSICAL JOURNAL 780(2), 184, JAN 10 2014
306	Cosmic propagators at two-loop order Bernardeau, Francis; Taruya, Atsushi; Nishimichi, Takahiro PHYSICAL REVIEW D 89(2), 23502, JAN 8 2014
307	Explicit calculation of Frobenius isomorphisms and Poincare duality in the theory of arithmetic D-modules Abe, Tomoyuki RENDICONTI DEL SEMINARIO MATEMATICO DELLA UNIVERSITA DI PADOVA 131, pp.89-149, 2014
308	Positive Representations of Split Real Quantum Groups and Future Perspectives Frenkel, Igor B.; Ip, Ivan C. H. INTERNATIONAL MATHEMATICS RESEARCH NOTICES (8), pp.2126-2164, 2014
309	The universe dominated by oscillating scalar with non-minimal derivative coupling to gravity Jinno, Ryusuke; Mukaida, Kyohei; Nakayama, Kazunori JOURNAL OF COSMOLOGY AND ASTROPARTICLE PHYSICS (1), 31, JAN 2014
310	Constraining primordial magnetic fields with distortions of the black-body spectrum of the cosmic microwave background: pre- and post-decoupling contributions Kunze, Kerstin E.; Komatsu, Eiichiro JOURNAL OF COSMOLOGY AND ASTROPARTICLE PHYSICS (1), 9, JAN 2014
311	Identifying the most crucial parameters of the initial curvature profile for primordial black hole formation Nakama, Tomohiro; Harada, Tomohiro; Polnarev, A. G.; Yokoyama, Jun'ichi JOURNAL OF COSMOLOGY AND ASTROPARTICLE PHYSICS (1), 37, JAN 2014
312	NORMAL STATES OF TYPE III FACTORS Kawahigashi, Yasuyuki; Ogata, Yoshiko; Stormer, Erling PACIFIC JOURNAL OF MATHEMATICS 267(1), pp.131-139, JAN 2014
313	THE X-RAY ZURICH ENVIRONMENTAL STUDY (X-ZENS). I. CHANDRA AND XMM-NEWTON OBSERVATIONS OF ACTIVE GALACTIC NUCLEI IN GALAXIES IN NEARBY GROUPS Silverman, J. D.; Miniati, F.; Finoguenov, A.; Carollo, C. M.; Cibinel, A.; Lilly, S. J.; Schawinski, K. ASTROPHYSICAL JOURNAL 780(1), 67, JAN 1 2014
314	Modular categories associated with unipotent groups Deshpande, Tanmay SELECTA MATHEMATICA-NEW SERIES 20(1), pp.285-313, JAN 2014

## 2. Review articles

No.	Author names and details
108	REVIEW OF PARTICLE PHYSICS Olive, K. A. et al. CHINESE PHYSICS C 38(9), 90001, SEP 2014
218	GR 20 parallel session A3: modified gravity Horava, Petr; Mohd, Arif; Melby-Thompson, Charles M.; Shawhan, Peter GENERAL RELATIVITY AND GRAVITATION 46(5), 1720, MAY 2014

287	Extragalactic science, cosmology, and Galactic archaeology with the Subaru Prime Focus Spectrograph Takada, Masahiro et al. PUBLICATIONS OF THE ASTRONOMICAL SOCIETY OF JAPAN 66(1), R1, FEB 2014
-----	---

## 3. Proceedings

No.	Author names and details
20	Toward the detection of gravitational waves under non-Gaussian noises I. Locally optimal statistic Yokoyama, Jun'ichi PROCEEDINGS OF THE JAPAN ACADEMY SERIES B-PHYSICAL AND BIOLOGICAL SCIENCES 90(10), pp.422-432, DEC 2014

## 4. Other English articles

N/A

## 5. Articles written in other than English

N/A

## B. WPI-related papers

## 1. Original articles

No.	Author names and details
315	Distribution of the number of generations in flux compactifications Braun, Andreas P.; Watari, Taizan PHYSICAL REVIEW D 90(12), 121901, DEC 30 2014
316	An example of Newton's method for an equation in Gevrey series Getmanenko, Alexander JOURNAL OF DIFFERENTIAL EQUATIONS 257(12), pp.4600-4631, DEC 15 2014
317	Essential physics of early galaxy formation Dayal, Pratika; Ferrara, Andrea; Dunlop, James S.; Pacucci, Fabio MONTHLY NOTICES OF THE ROYAL ASTRONOMICAL SOCIETY 445(3), pp.2545-2557, DEC 11 2014
318	PAIR-INSTABILITY SUPERNOVAE IN THE LOCAL UNIVERSE Whalen, Daniel J.; Smidt, Joseph; Heger, Alexander; Hirschi, Raphael; Yusof, Norhasliza; Even, Wesley; Fryer, Chris L.; Stiavelli, Massimo; Chen, Ke-Jung; Joggerst, Candace C. ASTROPHYSICAL JOURNAL 797(1), 9, DEC 10 2014
319	Generic scalar potentials for inflation in supergravity with a single chiral superfield Ketov, Sergei V.; Terada, Takahito JOURNAL OF HIGH ENERGY PHYSICS (12), 62, DEC 9 2014
320	Cosmic shear full nulling: sorting out dynamics, geometry and systematics Bernardeau, Francis; Nishimichi, Takahiro; Taruya, Atsushi MONTHLY NOTICES OF THE ROYAL ASTRONOMICAL SOCIETY 445(2), pp.1526-1537, DEC 1 2014

321	Skewness dependence of generalized parton distributions, conformal OPE, and the AdS/CFT correspondence Nishio, Ryoichi; Watari, Taizan PHYSICAL REVIEW D 90(12), 125001, DEC 1 2014
322	Axion models with high scale inflation Moroi, Takeo; Mukaida, Kyohei; Nakayama, Kazunori; Takimoto, Masahiro JOURNAL OF HIGH ENERGY PHYSICS (11), 151, NOV 27 2014
323	CLUSTERING OF MODERATE LUMINOSITY X-RAY-SELECTED TYPE 1 AND TYPE 2 AGNS AT Z similar to 3 Allevato, V.; Finoguenov, A.; Civano, F.; Cappelluti, N.; Shankar, F.; Miyaji, T.; Hasinger, G.; Gilli, R.; Zamorani, G.; Lanzuisi, G.; Salvato, M.; Elvis, M.; Comastri, A.; Silverman, J. ASTROPHYSICAL JOURNAL 796(1), 4, NOV 20 2014
324	A UNIFORM HISTORY FOR GALAXY EVOLUTION Steinhardt, Charles. L.; Speagle, Josh S. ASTROPHYSICAL JOURNAL 796(1), 25, NOV 20 2014
325	Deconfinement transition as black hole formation by the condensation of QCD strings Hanada, Masanori; Maltz, Jonathan; Susskind, Leonard PHYSICAL REVIEW D 90(10), 105019, NOV 14 2014
326	Characterizing SL2S galaxy groups using the Einstein radius Verdugo, T.; Motta, V.; Foex, G.; Forero-Romero, J. E.; Munoz, R. P.; Pello, R.; Limousin, M.; More, A.; Cabanac, R.; Soucail, G.; Blakeslee, J. P.; Mejia-Narvaez, A. J.; Magris, G.; Fernandez-Trincado, J. G. ASTRONOMY & ASTROPHYSICS 571, A65, NOV 2014
327	LY alpha FOREST TOMOGRAPHY FROM BACKGROUND GALAXIES: THE FIRST MEGAPARSEC-RESOLUTION LARGE-SCALE STRUCTURE MAP AT Z > 2 Lee, Khee-Gan et al. ASTROPHYSICAL JOURNAL LETTERS 795(1), L12, NOV 1 2014
328	Trihyperkahler reduction and instanton bundles on CP3 Jardim, Marcos; Verbitsky, Misha COMPOSITIO MATHEMATICA 150(11), pp.1836-1868, NOV 2014
329	Near-infrared polarimetry of the GG Tauri A binary system Itoh, Yoichi et al. RESEARCH IN ASTRONOMY AND ASTROPHYSICS 14(11), pp.1438-1446, NOV 2014
330	CHANGING IONIZATION CONDITIONS IN SDSS GALAXIES WITH ACTIVE GALACTIC NUCLEI AS A FUNCTION OF ENVIRONMENT FROM PAIRS TO CLUSTERS Khabiboulline, Emil T.; Steinhardt, Charles L.; Silverman, John D.; Ellison, Sara L.; Mendel, J. Trevor; Patton, David R. ASTROPHYSICAL JOURNAL 795(1), 62, NOV 1 2014
331	SURFACE GEOMETRY OF PROTOPLANETARY DISKS INFERRED FROM NEAR-INFRARED IMAGING POLARIMETRY Takami, Michihiro et al. ASTROPHYSICAL JOURNAL 795(1), 71, NOV 1 2014
332	Probing large-scale filaments with H I and He-3 II Takeuchi, Yoshitaka; Zaroubi, Saleem; Sugiyama, Naoshi MONTHLY NOTICES OF THE ROYAL ASTRONOMICAL SOCIETY 444(3), pp.2236-2250, NOV 1 2014
333	Boundaries and defects of N=4 SYM with 4 supercharges. Part I: Boundary/junction conditions Hashimoto, Akikazu; Ouyang, Peter; Yamazaki, Masahito JOURNAL OF HIGH ENERGY PHYSICS (10), 107, OCT 20 2014



334	Boundaries and defects of N=4 SYM with 4 supercharges. Part II: Brane constructions and 3d N=2 field theories Hashimoto, Akikazu; Ouyang, Peter; Yamazaki, Masahito JOURNAL OF HIGH ENERGY PHYSICS (10), 108, OCT 20 2014
335	Constraining primordial non-Gaussianity via a multitracer technique with surveys by Euclid and the Square Kilometre Array Yamauchi, Daisuke; Takahashi, Keitaro; Oguri, Masamune PHYSICAL REVIEW D 90(8), 83520, OCT 20 2014
336	THE DEPENDENCE OF GALACTIC OUTFLOWS ON THE PROPERTIES AND ORIENTATION OF zCOSMOS GALAXIES AT z similar to 1 Bordoloi, R. et al. ASTROPHYSICAL JOURNAL 794(2), 130, OCT 20 2014
337	THE ORIGIN OF THE MOST IRON-POOR STAR Marassi, S.; Chiaki, G.; Schneider, R.; Limongi, M.; Omukai, K.; Nozawa, T.; Chieffi, A.; Yoshida, N. ASTROPHYSICAL JOURNAL 794(2), 100, OCT 20 2014
338	The circumgalactic medium of high-redshift galaxies Pallottini, A.; Gallerani, S.; Ferrara, A. MONTHLY NOTICES OF THE ROYAL ASTRONOMICAL SOCIETY 444(1), pp.L105-L109, OCT 11 2014
339	A 2.5 per cent measurement of the growth rate from small-scale redshift space clustering of SDSS-III CMASS galaxies Reid, Beth A.; Seo, Hee-Jong; Leauthaud, Alexie; Tinker, Jeremy L.; White, Martin MONTHLY NOTICES OF THE ROYAL ASTRONOMICAL SOCIETY 444(1), pp.476-502, OCT 11 2014
340	Polynomial chaotic inflation in supergravity revisited Nakayama, Kazunori; Takahashi, Fuminobu; Yanagida, Tsutomu T. PHYSICS LETTERS B 737, pp.151-155, OCT 7 2014
341	Relaxing isocurvature bounds on string axion dark matter Kawasaki, Masahiro; Kitajima, Naoya; Takahashi, Fuminobu PHYSICS LETTERS B 737, pp.178-184, OCT 7 2014
342	Anomaly polynomial of general 6D SCFTs Ohmori, Kantaro; Shimizu, Hiroyuki; Tachikawa, Yuji; Yonekura, Kazuya PROGRESS OF THEORETICAL AND EXPERIMENTAL PHYSICS (10), 103B07, OCT 2014
343	Stability conditions and birational geometry of projective surfaces Toda, Yukinobu COMPOSITIO MATHEMATICA 150(10), pp.1755-1788, OCT 2014
344	An excess of dusty starbursts related to the Spiderweb galaxy Dannerbauer, H.; Kurk, J. D.; De Breuck, C.; Wylezalek, D.; Santos, J. S.; Koyama, Y.; Seymour, N.; Tanaka, M.; Hatch, N.; Altieri, B.; Coia, D.; Galametz, A.; Kodama, T.; Miley, G.; Rottgering, H.; Sanchez-Portal, M.; Valtchanov, I.; Venemans, B.; Ziegler, B. ASTRONOMY & ASTROPHYSICS 570, A55, OCT 2014
345	A HIGHLY CONSISTENT FRAMEWORK FOR THE EVOLUTION OF THE STAR-FORMING "MAIN SEQUENCE" FROM z similar to 0-6 Speagle, J. S.; Steinhardt, C. L.; Capak, P. L.; Silverman, J. D. ASTROPHYSICAL JOURNAL SUPPLEMENT SERIES 214(2), 15, OCT 2014
346	BRIDGELAND STABILITY CONDITIONS ON THREEFOLDS II: AN APPLICATION TO FUJITA'S CONJECTURE Bayer, Arend; Bertram, Aaron; Macri, Emanuele; Toda, Yukinobu JOURNAL OF ALGEBRAIC GEOMETRY 23(4), pp.693-710, OCT 2014

347	On the rational K-2 of a curve of GL(2) type over a global field of positive characteristic Chida, Masataka; Kondo, Satoshi; Yamauchi, Takuya JOURNAL OF K-THEORY 14(2), pp.313-342, OCT 2014
348	Shatalov-Sternin's construction of complex WKB solutions and the choice of integration paths Getmanenko, Alexander MATHEMATISCHE NACHRICHTEN 287(14-15), pp.1642-1658, OCT 2014
350	Effective string theory simplified Hellerman, Simeon; Maeda, Shunsuke; Maltz, Jonathan; Swanson, Ian JOURNAL OF HIGH ENERGY PHYSICS (9), 183, SEP 30 2014
351	Reconstruction of vectorlike top partner from fully hadronic final states Endo, Motoi; Hamaguchi, Koichi; Ishikawa, Kazuya; Stoll, Martin PHYSICAL REVIEW D 90(5), 55027, SEP 24 2014
352	Implications of the B-mode polarization measurement for direct detection of inflationary gravitational waves Kuroyanagi, Sachiko; Tsujikawa, Shinji; Chiba, Takeshi; Sugiyama, Naoshi PHYSICAL REVIEW D 90(6), 63513, SEP 12 2014
353	Inflation in supergravity with a single chiral superfield Ketov, Sergei V.; Terada, Takahiro PHYSICS LETTERS B 736, pp.272-277, SEP 7 2014
354	Entanglement of local operators in large-N conformal field theories Caputa, Pawel; Nozaki, Masahiro; Takayanagi, Tadashi PROGRESS OF THEORETICAL AND EXPERIMENTAL PHYSICS (9), 093B06, SEP 2014
355	Curvaton in large field inflation Fujita, Tomohiro; Kawasaki, Masahiro; Yokoyama, Shuichiro JOURNAL OF COSMOLOGY AND ASTROPARTICLE PHYSICS (9), 15, SEP 2014
357	The POLARBEAR-2 Experiment Suzuki, A. et al. JOURNAL OF LOW TEMPERATURE PHYSICS 176(5-6), pp.719-725, SEP 2014
358	The POLARBEAR Cosmic Microwave Background Polarization Experiment Barron, D. et al. JOURNAL OF LOW TEMPERATURE PHYSICS 176(5-6), pp.726-732, SEP 2014
359	Mission Design of LiteBIRD Matsumura, T. et al. JOURNAL OF LOW TEMPERATURE PHYSICS 176(5-6), pp.733-740, SEP 2014
360	STAR FORMATION AT $4 < z < 6$ FROM THE SPITZER LARGE AREA SURVEY WITH HYPER-SUPRIME-CAM (SPLASH) Steinhardt, Charles L. et al. ASTROPHYSICAL JOURNAL LETTERS 791(2), L25, AUG 20 2014
361	Quantum dimension as entanglement entropy in two dimensional conformal field theories He, Song; Numasawa, Tokiro; Takayanagi, Tadashi; Watanabe, Kento PHYSICAL REVIEW D 90(4), 41701, AUG 13 2014
362	Anomaly polynomial of E-string theories Ohmori, Kantaro; Shimizu, Hiroyuki; Tachikawa, Yuji JOURNAL OF HIGH ENERGY PHYSICS (8), 2, AUG 1 2014
363	Improved cosmological constraints from a joint analysis of the SDSS-II and SNLS supernova samples Betoule, M. et al. ASTRONOMY & ASTROPHYSICS 568, A22, AUG 2014

364	Isocurvature perturbations and tensor mode in light of Planck and BICEP2 Kawasaki, Masahiro; Sekiguchi, Toyokazu; Takahashi, Tomo; Yokoyama, Shuichiro JOURNAL OF COSMOLOGY AND ASTROPARTICLE PHYSICS (8), 43, AUG 2014
365	Dark matter chaotic inflation in light of BICEP2 Mukaida, Kyohei; Nakayama, Kazunori JOURNAL OF COSMOLOGY AND ASTROPARTICLE PHYSICS (8), 62, AUG 2014
366	Reproducing cosmic evolution of galaxy population from $z=4$ to 0 Okamoto, Takashi; Shimizu, Ikkoh; Yoshida, Naoki PUBLICATIONS OF THE ASTRONOMICAL SOCIETY OF JAPAN 66(4), 70, AUG 2014
367	The Riemann-Roch theorem without denominators in motivic homotopy theory Kondo, Satoshi; Yasuda, Seidai JOURNAL OF PURE AND APPLIED ALGEBRA 218(8), pp.1478-1495, AUG 2014
368	Spin-orbit force from lattice QCD Murano, K.; Ishii, N.; Aoki, S.; Doi, T.; Hatsuda, T.; Ikeda, Y.; Inoue, T.; Nemura, H.; Sasaki, K. PHYSICS LETTERS B 735, pp.19-24, JUL 30 2014
369	Running spectral index from large-field inflation with modulations revisited Czerny, Michael; Kobayashi, Takeshi; Takahashia, Fuminobu PHYSICS LETTERS B 735, pp.176-180, JUL 30 2014
370	Dark matter-baryons separation at the lowest mass scale: the Bullet Group Gastaldello, F.; Limousin, M.; Foex, G.; Munoz, R. P.; Verdugo, T.; Motta, V.; More, A.; Cabanac, R.; Buote, D. A.; Eckert, D.; Ettori, S.; Fritz, A.; Ghizzardi, S.; Humphrey, P. J.; Meneghetti, M.; Rossetti, M. MONTHLY NOTICES OF THE ROYAL ASTRONOMICAL SOCIETY 442(1), pp.L76-L80, JUL 21 2014
371	On the Higgs-like quintessence for dark energy Ketov, Sergei V.; Watanabe, Natsuki MODERN PHYSICS LETTERS A 29(22), 1450117, JUL 20 2014
372	REDSHIFT EVOLUTION OF THE DYNAMICAL PROPERTIES OF MASSIVE GALAXIES FROM SDSS-III/BOSS Beifiori, Alessandra et al. ASTROPHYSICAL JOURNAL 789(2), 92, JUL 10 2014
373	Inflation, Cosmic Perturbations and Non-Gaussianities Wang Yi COMMUNICATIONS IN THEORETICAL PHYSICS 62(1), pp.109-166, JUL 2014
374	Evolution of perturbations and cosmological constraints in decaying dark matter models with arbitrary decay mass products Aoyama, Shohei; Sekiguchi, Toyokazu; Ichiki, Kiyotomo; Sugiyama, Naoshi JOURNAL OF COSMOLOGY AND ASTROPARTICLE PHYSICS (7), 21, JUL 2014
375	THE CARNEGIE SUPERNOVA PROJECT: INTRINSIC COLORS OF TYPE Ia SUPERNOVAE Burns, Christopher R.; Stritzinger, Maximilian; Phillips, M. M.; Hsiao, E. Y.; Contreras, Carlos; Persson, S. E.; Folatelli, Gaston; Boldt, Luis; Campillay, Abdo; Castellon, Sergio; Freedman, Wendy L.; Madore, Barry F.; Morrell, Nidia; Salgado, Francisco; Suntzeff, Nicholas B. ASTROPHYSICAL JOURNAL 789(1), 32, JUL 1 2014
376	PERSISTENT C II ABSORPTION IN THE NORMAL TYPE Ia SUPERNOVA 2002fk Cartier, Regis; Hamuy, Mario; Pignata, Giuliano; Foerster, Francisco; Zelaya, Paula; Folatelli, Gaston; Phillips, Mark M.; Morrell, Nidia; Krisciunas, Kevin; Suntzeff, Nicholas B.; Clocchiatti, Alejandro; Coppi, Paolo; Contreras, Carlos; Roth, Miguel; Koviak, Kathleen; Maza, Jose; Gonzalez, Luis; Gonzalez, Sergio; Huerta, Leonor ASTROPHYSICAL JOURNAL 789(1), 89, JUL 1 2014

377	Solving the tension between high-scale inflation and axion isocurvature perturbations Higaki, Tetsutaro; Jeong, Kwang Sik; Takahashi, Fuminobu PHYSICS LETTERS B 734, pp.21-26, JUN 27 2014
378	Higgs chaotic inflation and the primordial B-mode polarization discovered by BICEP2 Nakayama, Kazunori; Takahashi, Fuminobu PHYSICS LETTERS B 734, pp.96-99, JUN 27 2014
379	Multi-natural inflation in supergravity and BICEP2 Czerny, Michael; Higaki, Tetsutaro; Takahashi, Fuminobu PHYSICS LETTERS B 734, pp.167-172, JUN 27 2014
380	U(1)(B-L) symmetry restoration and effective neutrino species Ishida, Hiroyuki; Takahashi, Fuminobu PHYSICS LETTERS B 734, pp.183-187, JUN 27 2014
381	Gravitino problem in supergravity chaotic inflation and SUSY breaking scale after BICEP2 Nakayama, Kazunori; Takahashi, Fuminobu; Yanagida, Tsutomu T. PHYSICS LETTERS B 734, pp.358-363, JUN 27 2014
382	Nonsupersymmetric brane configurations, Seiberg duality, and dynamical symmetry breaking Armoni, Adi PHYSICAL REVIEW D 89(12), 125025, JUN 27 2014
383	THE EYNARD-ORANTIN RECURSION FOR THE TOTAL ANCESTOR POTENTIAL Milanov, Todor DUKE MATHEMATICAL JOURNAL 163(9), pp.1795-1824, JUN 15 2014
384	Mixed (cold plus warm) dark matter in the bino-wino coannihilation scenario Ibe, Masahiro; Kamada, Ayuki; Matsumoto, Shigeki PHYSICAL REVIEW D 89(12), 123506, JUN 11 2014
385	Moduli spaces of SO(8) instantons on smooth ALE spaces as Higgs branches of 4d N=2 supersymmetric theories Tachikawa, Yuji JOURNAL OF HIGH ENERGY PHYSICS (6), 56, JUN 10 2014
386	WHAT IS THE PHYSICAL ORIGIN OF STRONG Ly alpha EMISSION? II. GAS KINEMATICS AND DISTRIBUTION OF Ly alpha EMITTERS Shibuya, Takatoshi; Ouchi, Masami; Nakajima, Kimihiko; Hashimoto, Takuya; Ono, Yoshiaki; Rauch, Michael; Gauthier, Jean-Rene; Shimasaku, Kazuhiro; Goto, Ryosuke; Mori, Masao; Umemura, Masayuki ASTROPHYSICAL JOURNAL 788(1), 74, JUN 10 2014
387	The 7 keV axion dark matter and the X-ray line signal Higaki, Tetsutaro; Jeong, Kwang Sik; Takahashi, Fuminobu PHYSICS LETTERS B 733, pp.25-31, JUN 2 2014
388	Curvaton dynamics revisited Mukaida, Kyohei; Nakayama, Kazunori; Takimoto, Masahiro JOURNAL OF COSMOLOGY AND ASTROPARTICLE PHYSICS (6), 13, JUN 2014
390	Introduction to temperature anisotropies of Cosmic Microwave Background radiation Sugiyama, Naoshi PROGRESS OF THEORETICAL AND EXPERIMENTAL PHYSICS (6), 06B101, JUN 2014
391	DISCOVERY OF FOUR DOUBLY IMAGED QUASAR LENSES FROM THE SLOAN DIGITAL SKY SURVEY Inada, Naohisa; Oguri, Masamune; Rusu, Cristian E.; Kayo, Issha; Morokuma, Tomoki ASTRONOMICAL JOURNAL 147(6), 153, JUN 2014

392	Larger sizes of massive quiescent early-type galaxies in clusters than in the field at $0.8 < z < 1.5$ Delaye, L.; Huertas-Company, M.; Mei, S.; Lidman, C.; Licitra, R.; Newman, A.; Raichoor, A.; Shankar, F.; Barrientos, F.; Bernardi, M.; Cerulo, P.; Couch, W.; Demarco, R.; Munoz, R.; Sanchez-Janssen, R.; Tanaka, M. MONTHLY NOTICES OF THE ROYAL ASTRONOMICAL SOCIETY 441(1), pp.203-223, JUN 2014
393	Analysis of blueshifted emission peaks in Type II supernovae Anderson, J. P.; Dessart, L.; Gutierrez, C. P.; Hamuy, M.; Morrell, N. I.; Phillips, M.; Folatelli, G.; Stritzinger, M. D.; Freedman, W. L.; Gonzalez-Gaitan, S.; McCarthy, P.; Suntzeff, N.; Thomas-Osip, J. MONTHLY NOTICES OF THE ROYAL ASTRONOMICAL SOCIETY 441(1), pp.671-680, JUN 2014
394	Multiple cover formula of generalized DT invariants I: Parabolic stable pairs Toda, Yukinobu ADVANCES IN MATHEMATICS 257, pp.476-526, JUN 1 2014
395	Multi-natural inflation in supergravity Czerny, Michael; Higaki, Tetsutaro; Takahashi, Fuminobu JOURNAL OF HIGH ENERGY PHYSICS (5), 144, MAY 29 2014
396	RANDOM WALKS AND EFFECTIVE OPTICAL DEPTH IN RELATIVISTIC FLOW Shibata, Sanshiro; Tominaga, Nozomu; Tanaka, Masaomi ASTROPHYSICAL JOURNAL LETTERS 787(1), L4, MAY 20 2014
397	H alpha SPECTRAL DIVERSITY OF TYPE II SUPERNOVAE: CORRELATIONS WITH PHOTOMETRIC PROPERTIES Gutierrez, Claudia P.; Anderson, Joseph P.; Hamuy, Mario; Gonzalez-Gaitan, Santiago; Folatelli, Gaston; Morrell, Nidia I.; Stritzinger, Maximilian D.; Phillips, Mark M.; McCarthy, Patrick; Suntzeff, Nicholas B.; Thomas-Osip, Joanna ASTROPHYSICAL JOURNAL LETTERS 786(2), L15, MAY 10 2014
399	On the 6d origin of discrete additional data of 4d gauge theories Tachikawa, Yuji JOURNAL OF HIGH ENERGY PHYSICS (5), 20, MAY 6 2014
400	Compensation for large tensor modes with iso-curvature perturbations in CM B anisotropies Kawasaki, Masahiro; Yokoyama, Shuichiro JOURNAL OF COSMOLOGY AND ASTROPARTICLE PHYSICS (5), 46, MAY 2014
401	CHARACTERIZING THE V-BAND LIGHT-CURVES OF HYDROGEN-RICH TYPE II SUPERNOVAE Anderson, Joseph P. et al. ASTROPHYSICAL JOURNAL 786(1), 67, MAY 1 2014
402	Silver blaze puzzle in $1/N$ -c expansions of cold and dense QCD matter Armoni, Adi; Fukushima, Kenji PHYSICAL REVIEW D 89(10), 105001, MAY 1 2014
403	7 keV sterile neutrino dark matter from split flavor mechanism Ishida, Hiroyuki; Jeong, Kwang Sik; Takahashi, Fuminobu PHYSICS LETTERS B 732, pp.196-200, MAY 1 2014
404	Flat Higgs potential from Planck scale supersymmetry breaking Ibe, Masahiro; Matsumoto, Shigeki; Yanagida, Tsutomu T. PHYSICS LETTERS B 732, pp.214-217, MAY 1 2014
405	Physical properties of UDF12 galaxies in cosmological simulations Shimizu, Ikkoh; Inoue, Akio K.; Okamoto, Takashi; Yoshida, Naoki MONTHLY NOTICES OF THE ROYAL ASTRONOMICAL SOCIETY 440(1), pp.731-745, MAY 2014

406	Simulating cosmic metal enrichment by the first galaxies Pallottini, A.; Ferrara, A.; Gallerani, S.; Salvadori, S.; D'Odorico, V. MONTHLY NOTICES OF THE ROYAL ASTRONOMICAL SOCIETY 440(3), pp.2498-2518, MAY 2014
407	Lensed Type Ia supernovae as probes of cluster mass models Nordin, J. et al. MONTHLY NOTICES OF THE ROYAL ASTRONOMICAL SOCIETY 440(3), pp.2742-2754, MAY 2014
408	Entanglement between two interacting CFTs and generalized holographic entanglement entropy Mollabashi, Ali; Shiba, Noburo; Takayanagi, Tadashi JOURNAL OF HIGH ENERGY PHYSICS (4), 185, APR 30 2014
409	Starobinsky model in N=2 supergravity Ketov, Sergei V. PHYSICAL REVIEW D 89(8), 85042, APR 29 2014
410	LONG-LASTING X-RAY EMISSION FROM TYPE IIB SUPERNOVA 2011dh AND MASS-LOSS HISTORY OF THE YELLOW SUPERGIANT PROGENITOR Maeda, Keiichi; Katsuda, Satoru; Bamba, Aya; Terada, Yukikatsu; Fukazawa, Yasushi ASTROPHYSICAL JOURNAL 785(2), 95, APR 20 2014
411	redMaPPer. I. ALGORITHM AND SDSS DR8 CATALOG Rykoff, E. S.; Rozo, E.; Busha, M. T.; Cunha, C. E.; Finoguenov, A.; Evrard, A.; Hao, J.; Koester, B. P.; Leauthaud, A.; Nord, B.; Pierre, M.; Reddick, R.; Sadibekova, T.; Sheldon, E. S.; Wechsler, R. H. ASTROPHYSICAL JOURNAL 785(2), 104, APR 20 2014
412	SN 2010MB: DIRECT EVIDENCE FOR A SUPERNOVA INTERACTING WITH A LARGE AMOUNT OF HYDROGEN-FREE CIRCUMSTELLAR MATERIAL Ben-Ami, Sagi et al. ASTROPHYSICAL JOURNAL 785(1), 37, APR 10 2014
413	WHAT IS THE PHYSICAL ORIGIN OF STRONG Ly alpha EMISSION ? I. DEMOGRAPHICS OF Ly alpha EMITTER STRUCTURES Shibuya, Takatoshi; Ouchi, Masami; Nakajima, Kimihiko; Yuma, Suraphong; Hashimoto, Takuya; Shimasaku, Kazuhiro; Mori, Masao; Umemura, Masayuki ASTROPHYSICAL JOURNAL 785(1), 64, APR 10 2014
414	The Noether-Lefschetz problem and gauge-group-resolved landscapes: F-theory on K3 x K3 as a test case Braun, A. P.; Kimura, Y.; Watari, T. JOURNAL OF HIGH ENERGY PHYSICS (4), 50, APR 7 2014
415	Longevity problem of sterile neutrino dark matter Ishida, Hiroyuki; Jeong, Kwang Sik; Takahashi, Fuminobu PHYSICS LETTERS B 731, pp.242-247, APR 4 2014
416	Signatures of anisotropic sources in the trispectrum of the cosmic microwave background Shiraishi, Maresuke; Komatsu, Enchiro; Peloso, Marco JOURNAL OF COSMOLOGY AND ASTROPARTICLE PHYSICS (4), 27, APR 2014
417	The Type Ia supernovae rate with Subaru/XMM-Newton Deep Survey Okumura, Jun E.; Ihara, Yutaka; Doi, Mamoru; Morokuma, Tomoki; Pain, Reynald; Totani, Tomonori; Barbary, Kyle; Takanashi, Naohiro; Yasuda, Naoki; Aldering, Greg; Dawson, Kyle; Goldhaber, Gerson; Hook, Isobel; Lidman, Chris; Perlmutter, Saul; Spadafora, Anthony; Suzuki, Nao; Wang, Lifan PUBLICATIONS OF THE ASTRONOMICAL SOCIETY OF JAPAN 66(2), 49, APR 2014

418	Hubble Space Telescope spectra of the Type Ia supernova SN 2011fe: a tail of low-density, high-velocity material with $Z < Z(\text{circle dot})$ Mazzali, P. A.; Sullivan, M.; Hachinger, S.; Ellis, R. S.; Nugent, P. E.; Howell, D. A.; Gal-Yam, A.; Maguire, K.; Cooke, J.; Thomas, R.; Nomoto, K.; Walker, E. S. MONTHLY NOTICES OF THE ROYAL ASTRONOMICAL SOCIETY 439(2), pp.1959-1979, APR 2014
419	Minimal representations via Bessel operators Hilgert, Joachim; Kobayashi, Toshiyuki; Mollers, Jan JOURNAL OF THE MATHEMATICAL SOCIETY OF JAPAN 66(2), pp.349-414, APR 2014
420	On Burau's representations at roots of unity Funar, Louis; Kohno, Toshitake GEOMETRIAE DEDICATA 169(1), pp.145-163, APR 2014
421	Elliptic Genera of Two-Dimensional Gauge Theories with Rank-One Gauge Groups Benini, Francesco; Eager, Richard; Hori, Kentaro; Tachikawa, Yuji LETTERS IN MATHEMATICAL PHYSICS 104(4), pp.465-493, APR 2014
422	Holographic geometry of cMERA for quantum quenches and finite temperature Mollabashi, Ali; Naozaki, Masahiro; Ryu, Shinsei; Takayanagi, Tadashi JOURNAL OF HIGH ENERGY PHYSICS (3), 98, MAR 21 2014
423	Quantum Entanglement of Local Operators in Conformal Field Theories Nozaki, Masahiro; Numasawa, Tokiro; Takayanagi, Tadashi PHYSICAL REVIEW LETTERS 112(11), 111602, MAR 21 2014
424	The skew-growth function on the monoid of square matrices <i>Zzzz</i> JOURNAL OF ALGEBRA 402, pp.294-318, MAR 15 2014
425	A practical GMSB model for explaining the muon ( $g-2$ ) with gauge coupling unification Bhattacharyya, Gautam; Bhattacharjee, Biplob; Yanagida, Tsutomu T.; Yokozaki, Norimi PHYSICS LETTERS B 730, pp.231-235, MAR 7 2014
426	A VIRTUAL KAWASAKI-RIEMANN-ROCH FORMULA Tonita, Valentin PACIFIC JOURNAL OF MATHEMATICS 268(1), pp.249-255, MAR 2014
427	Critical constraint on inflationary magnetogenesis Fujita, Tomohiro; Yokoyama, Shuichiro JOURNAL OF COSMOLOGY AND ASTROPARTICLE PHYSICS (3), 13, MAR 2014
428	Cosmological matching conditions and galilean genesis in Horndeski's theory Nishi, Sakine; Kobayashi, Tsutomu; Tanahashi, Norihiro; Yamaguchi, Masahide JOURNAL OF COSMOLOGY AND ASTROPARTICLE PHYSICS (3), 8, MAR 2014
429	Modular transformations and Verlinde formulae for logarithmic ( $p(+)$ , $p(-)$ )-models Ridout, David; Wood, Simon NUCLEAR PHYSICS B 880, pp.175-202, MAR 2014
430	Free subgroups within the images of quantum representations Funar, Louis; Kohno, Toshitake FORUM MATHEMATICUM 26(2), pp.337-355, MAR 2014
431	TWISTED ORBIFOLD GROMOV-WITTEN INVARIANTS Tonita, Valentin NAGOYA MATHEMATICAL JOURNAL 213, pp.141-187, MAR 2014
432	Low-scale neutrino seesaw mechanism and scalar dark matter Fabbrichesi, M.; Petcov, S. T. EUROPEAN PHYSICAL JOURNAL C 74(2), 2774, FEB 20 2014

433	Moduli-induced baryogenesis Ishiwata, Koji; Jeong, Kwang Sik; Takahashi, Fuminobu JOURNAL OF HIGH ENERGY PHYSICS (2), 62, FEB 14 2014
434	Generalised geometrical CP violation in a T ' lepton flavour model Girardi, Ivan; Meroni, Aurora; Petcov, S. T.; Spinrath, Martin JOURNAL OF HIGH ENERGY PHYSICS (2), 50, FEB 12 2014
435	Volume law for the entanglement entropy in non-local QFTs Shiba, Noburo; Takayanagi, Tadashi JOURNAL OF HIGH ENERGY PHYSICS (2), 33, FEB 7 2014
436	Characterization of the gaseous companion kappa Andromedae b New Keck and LBTI high-contrast observations Bonney, M. et al. ASTRONOMY & ASTROPHYSICS 562, A111, FEB 2014
437	Axions as hot and cold dark matter Jeong, Kwang Sik; Kawasaki, Masahiro; Takahashi, Fuminobu JOURNAL OF COSMOLOGY AND ASTROPARTICLE PHYSICS (2), 46, FEB 2014
438	ACTIVE GALACTIC NUCLEUS X-RAY VARIABILITY IN THE XMM-COSMOS SURVEY Lanzuisi, G. et al. ASTROPHYSICAL JOURNAL 781(2), 105, FEB 1 2014
439	Spectral energy distributions of type 1 AGN in XMM-COSMOS - II. Shape evolution Hao, Heng et al. MONTHLY NOTICES OF THE ROYAL ASTRONOMICAL SOCIETY 438(2), pp.1288-1304, FEB 2014
440	SN 2009N: linking normal and subluminous Type II-P SNe Takats, K. et al. MONTHLY NOTICES OF THE ROYAL ASTRONOMICAL SOCIETY 438(1), pp.368-387, FEB 2014
441	zCOSMOS 20k: satellite galaxies are the main drivers of environmental effects in the galaxy population at least to z similar to 0.7 Kovac, K. et al. MONTHLY NOTICES OF THE ROYAL ASTRONOMICAL SOCIETY 438(1), pp.717-738, FEB 2014
442	The incidence of obscuration in active galactic nuclei Merloni, A. et al. MONTHLY NOTICES OF THE ROYAL ASTRONOMICAL SOCIETY 437(4), pp.3550-3567, FEB 2014
443	The mass-metallicity relation at z similar to 1.4 revealed with Subaru/FMOS Yabe, Kiyoto; Ohta, Kouji; Iwamuro, Fumihide; Akiyama, Masayuki; Tamura, Naoyuki; Yuma, Suraphong; Kimura, Masahiko; Takato, Naruhisa; Moritani, Yuki; Sumiyoshi, Masanao; Maihara, Toshinori; Silverman, John; Dalton, Gavin; Lewis, Ian; Bonfield, David; Lee, Hanshin; Curtis-Lake, Emma; Macaulay, Edward; Clarke, Fraser MONTHLY NOTICES OF THE ROYAL ASTRONOMICAL SOCIETY 437(4), pp.3647-3663, FEB 2014
444	Higgs pair production at the LHC and ILC from a general potential Haba, Naoyuki; Kaneta, Kunio; Mimura, Yukihiro; Enkhbat, Tsendenbaljir PHYSICAL REVIEW D 89(1), 15018, JAN 22 2014
445	Equivalence of a-maximization and volume minimization Eager, Richard JOURNAL OF HIGH ENERGY PHYSICS (1), 89, JAN 17 2014



446	ALMA WILL DETERMINE THE SPECTROSCOPIC REDSHIFT $z > 8$ WITH FIR [O III] EMISSION LINES Inoue, A. K.; Shimizu, I.; Tamura, Y.; Matsuo, H.; Okamoto, T.; Yoshida, N. ASTROPHYSICAL JOURNAL LETTERS 780(2), L18, JAN 10 2014
448	Superconformal indices, Sasaki-Einstein manifolds, and cyclic homologies Eager, Richard; Schmude, Johannes; Tachikawa, Yuji ADVANCES IN THEORETICAL AND MATHEMATICAL PHYSICS 18(1), pp.129-175, JAN 2014
449	BRIDGELAND STABILITY CONDITIONS ON THREEFOLDS I: BOGOMOLOV-GIESEKER TYPE INEQUALITIES Bayer, Arend; Macri, Emanuele; Toda, Yukinobu JOURNAL OF ALGEBRAIC GEOMETRY 23(1), pp.117-163, JAN 2014
450	K-theoretic Gromov-Witten Invariants of Lines in Homogeneous Spaces Li, Changzheng; Mihalcea, Leonardo C. INTERNATIONAL MATHEMATICS RESEARCH NOTICES (17), pp.4625-4664, 2014
451	Construction of Holomorphic Local Conformal Framed Nets Kawahigashi, Yasuyuki; Suthichitranont, Noppakhun INTERNATIONAL MATHEMATICS RESEARCH NOTICES (11), pp.2924-2943, 2014
452	Optical and near-IR observations of the faint and fast 2008ha-like supernova 2010ae Stritzinger, M. D. et al. ASTRONOMY & ASTROPHYSICS 561, A146, JAN 2014

## 2. Review articles

No.	Author names and details
356	Formation, Habitability, and Detection of Extrasolar Moons Heller, Rene; Williams, Darren; Kipping, David; Limbach, Mary Anne; Turner, Edwin; Greenberg, Richard; Sasaki, Takanori; Bolmont, Emeline; Grasset, Olivier; Lewis, Karen; Barnes, Rory; Zuluaga, Jorge I. ASTROBIOLOGY 14(9), pp.798-835, SEP 2014
398	Leptonic CP violation and leptogenesis Petcov, S. T. INTERNATIONAL JOURNAL OF MODERN PHYSICS A 29(11-12), 1430028, MAY 10 2014
447	The Measurement of Neutrino Properties with Atmospheric Neutrinos Kajita, Takaaki ANNUAL REVIEW OF NUCLEAR AND PARTICLE SCIENCE 64(1), pp.343-362, 2014

## 3. Proceedings

No.	Author names and details
349	A NOTE ON BOGOMOLOV-GIESEKER TYPE INEQUALITY FOR CALABI-YAU 3-FOLDS Toda, Yukinobu PROCEEDINGS OF THE AMERICAN MATHEMATICAL SOCIETY 142(10), pp.3387-3394, OCT 2014
389	Symmetric pairs with finite-multiplicity property for branching laws of admissible representations Kobayashi, Toshiyuki PROCEEDINGS OF THE JAPAN ACADEMY SERIES A-MATHEMATICAL SCIENCES 90(6), pp.79-83, JUN 2014

4. Other English articles

N/A

5. Articles written in other than English

N/A

## B. Invited Lectures, Plenary Addresses (etc.) at International Conferences and International Research Meetings

- List up to 10 main presentations during FY2014 in order from most recent.
- For each, write the lecturer/presenter's name, presentation title, conference name and date(s)

No.	Lecturer/presenter names and details
1	Hiroshi Ooguri "Entanglement and Bootstrap" (invited speaker) Eurostrings 2015 Dept of Applied Math and Theor. Phys. (DAMTP), Cambridge, UK, 23-27 Mar 2015
2	Toshitake Kohno "Higher holonomy of braids" (invited speaker) The Tenth East Asian School of Knots and Related Topics East China Normal University, Shanghai, China, Jan 26-29, 2015
3	Mark Vagins "Zen and the Art of Gadolinium-Loaded Water cherenkov Detectors" (invited speaker) The 24th Workshop on General Relativity and Gravitation (JGRG24) Kavli IPMU, the University of Tokyo, 10-14 Nov 2014
4	Hitoshi Murayama "Power of Precision Higgs Measurements on Hierarchy Problem and Baryogenesis" (Invited speaker) HEFT2014 - Higgs Effective Field Theories Instituto de Física Teórica (UAM-CSIC) in Madrid, Sep 28-30, 2014
5	Yukinobu Toda "Derived category of coherent sheaves and counting invariants" Seoul ICM 2014 - International Congress of Mathematicians Coex, Seoul, Korea, Aug 13-21, 2014
6	Stavros, Katsanevas "Astroparticle Physics and Photodetector" (Invited speaker) 7th International Conference on New Developments in Photodetection Tours, France, Jun 30-Jul 4, 2014
7	Sergei Petcov "Theory Prospective on Neutrino Masses, Mixing and Leptonic CP Violation" (plenary talk) The 20th International Symposium on Particles, Strings and Cosmology (PASCOS 2014) Warsaw, Poland, Jun 22-27, 2014
8	Kentaro Hori "1d Index and Wall Crossing" (plenary speaker) String-Math 2014 University of Alberta, Edmonton, Canada, Jun 9-13, 2014
9	Toshiyuki Kobayashi "Visible Actions and Multiplicity-free Representations" (invited lecturer) XVIIth International Conference on Geometry, Integrability and Quantization Varna, Bulgaria, 6-11 June 2014
10	Masahiro Takada "Statistical Challenges in Weak Lensing Cosmology" (keynote speaker) IAU Symposium 306: Statistical Challenges in 21st Century Cosmology Lisbon, Portugal, 25-29 May 2014

## C. Major Awards

- List up to 10 main awards received during FY2014 in order from the most recent.
- For each, write the recipient's name, name of award, and year issued.
- In case of multiple recipients, underline those affiliated with the center.

No.	Recipient names and details
1	Joachim Hilgert, <u>Toshiyuki Kobayashi</u> , Jan Möllers JMSJ (the Journal of the Mathematical Society of Japan) Outstanding Paper Prize March 2015
2	<u>Tsuyoshi Nakaya</u> , <u>Masato Shiozawa</u> , Takashi Kobayashi Yoji Totsuka Memorial Prize March 2015
3	Eiichiro Komatsu Chushiro Hayashi Prize March 2015
4	Yukinobu Toda JSPS (Japan Society for the Promotion of Science) Prize January 2015
5	Tsuyoshi Nakaya Nishina Memorial Prize November 2014
6	Yuji Tachikawa Nishinomiya-Yukawa Memorial Prize November 2014
7	Horasio Casini, Marina Huerta, Shinsei Ryu, <u>Tadashi Takayanagi</u> The 2015 New Horizons in Physics Prizes November 2014
8	Saul Perlmutter, and members of the Supernova Cosmology Project team (Greg Aldering, Brian J. Boyle, Patricia G. Castro, Warrick J. Couch, Susana Deustua, Richard S. Ellis, Sebastien Fabbro, Alexei V. Filippenko, Andrew S. Fruchter, Ariel Goobar, Donald E. Groom, Isobel M. Hook, Mike Irwin, Alex G. Kim, Matthew Y. Kim, Robert A. Knop, Julia C. Lee, Chris Lidman, Thomas Matheson, Richard G. McMahon, Richard Muller, Heidi J. M. Newberg, Peter Nugent, Nelson J. Nunes, Reynald Pain, Nino Panagia, Carl R. Pennypacker, <u>Robert Quimby</u> , Pilar Ruiz-Lapuente, Bradley E. Schaefer and Nicholas Walton); Brian P. Schmidt, Adam Riess and members of the High-Z Supernova team (Peter Challis, Alejandro Clocchiatti, Alan Diercks, Alexei V. Filippenko, Peter M. Garnavich, Ron L. Gilliland, Craig J. Hogan, Saurabh Jha, Robert P. Kirshner, Bruno Leibundgut, Mark M. Phillips, David Reiss, R. Chris Smith, Jason Spyromilio, Christopher Stubbs, Nicholas B. Suntzeff and John Tonry) The 2015 Breakthrough Prize in Fundamental Physics November 2014
9	Yuji Tachikawa Herman Weyl Prize July 2014
10	Toshiyuki Kobayashi Medal with Purple Ribbon April 2014

## FY 2014 List of Principal Investigators

**NOTE:**

- *Underline names of principal investigators who belong to an overseas research institution.*
- *In case of researchers not listed in the latest report, attach "Biographical Sketch of a New Principal Investigator".*

<Results at the end of FY2014>									
Principal Investigators Total: 18									
Name (Age)	Affiliation (Position title, department, organization)	Academic degree, specialty	Working hours (Total working hours: 100%)				Starting date of project participation	Status of project participation (Describe in concrete terms)	Contributions by PIs from overseas research institutions
			Work on center project		Others				
			Research activities	Other activities	Research activities	Other activities			
<u>Hitoshi Murayama</u> (51)	Kavli IPMU (Director, Project Professor),  University of California, Berkeley (Professor, Physics Dept)	Ph.D. particle theory, cosmology	45%	40%	0%	15%	10/1/2007	Stays 70% at Kavli IPMU, and 30% at UC Berkeley of which a half of the time at Kavli IPMU Berkeley satellite. Joins videoconference 4 times a week.	Sending 2 young scientists (2 weeks each) and 2 senior scientists (1 week each). Accepting 5 young scientists (2 weeks each).
Yoichiro Suzuki (65)	Kavli IPMU (Deputy Director, Project Professor)	Ph.D. astropartic le physics	70%	5%	5%	20%	10/1/2007	Usually stays at Kamioka Branch. Joins videoconference once a week	
Hiroaki Aihara (59)	Kavli IPMU (Deputy Director),  UTokyo (Executive Vice President, Professor, Physics Dept)	Ph.D. high energy physics	25%	5%	0%	70%	10/1/2007	Stays at Kavli IPMU once a month. Joins videoconference once a week.	
<u>Alexey Bondal</u> (53)	Steklov Mathematical Institute (Professor)  Kavli IPMU (Project Professor)	Ph.D. mathemati cs	40%	0%	40%	20%	10/1/2007	Stays at Kavli IPMU 6 months a year. Joins videoconference once a week for the rest of 6 months.	Sending 1 senior scientist (2 weeks).

Kunio Inoue (49)	Tohoku University (Director, Professor, RCNS)	Ph.D. astropartic le physics	45%	0%	5%	50%	10/1/2007	Stays at Kamioka Branch once a week.	
Takaaki Kajita (56)	UTokyo (Director, Professor, ICRR)	Ph.D. astropartic le physics	40%	0%	0%	60%	10/1/2007	Stays at Kamioka Branch once a month. Usually stays at ICRR which is right next to Kavli IPMU.	
Stavros Katsanevas (61)	University of Paris 7 (Professor, Physics Dept)	Ph.D. astropartic le physics	20%	0%	10%	70%	10/1/2007	Stays at Kavli IPMU once a year. Joins videoconference once a month.	Sending 1 young scientist to Kavli IPMU (3 weeks).
Toshiyuki Kobayashi (52)	UTokyo (Professor, Graduate School of Mathematical Sciences)	Ph.D. mathemati cs	70%	0%	8%	22%	6/1/2011	Stays at Kavli IPMU once a month. Joins videoconference once a month.	
Toshitake Kohno (59)	UTokyo (Professor, Graduate School of Mathematical Sciences)	Ph.D. mathemati cs	70%	0%	8%	22%	10/1/2007	Stays at Kavli IPMU once a week. Joins videoconference once a week.	
Masayuki Nakahata (55)	UTokyo (Professor, ICRR)	Ph.D. astropartic le physics	85%	0%	9%	6%	10/1/2007	Usually stays at Kamioka Branch.	
Mihoko Nojiri (52)	KEK (Professor)	Ph.D. particle theory	40%	0%	40%	20%	10/1/2007	Stays at Kavli IPMU twice a week.	

Ken'ichi Nomoto (68)	Kavli IPMU (Project Professor) Hamamatsu professor	Ph.D. Astronomy	70%	0%	12%	18%	10/1/2007	Stays at Kavli IPMU full time.	
<u>Hiroshi Ooguri</u> (53)	California Institute of Technology (Professor, Physics Dept and Mathematics Dept),	Ph.D. string theory	66%	0%	3%	31%	10/1/2007	Stays at Kavli IPMU 3 months a year. Joins videoconference once a week for the rest of 9 months.	Sending 1 young scientist (2 weeks). Accepting 2 young scientists (2 weeks each).
Kyoji Saito (70)	Kavli IPMU (Project Professor)	Ph.D. mathemati cs	80%	20%	0%	0%	10/1/2007	Stays at Kavli IPMU full time.	
<u>David Spergel</u> (54)	Princeton University (Professor, Dept of Astrophysical Sciences)	Ph.D. cosmology	55%	0%	5%	40%	10/1/2007	Stays at Kavli IPMU once a year. Joins videoconference once a week.	Sending 1 professor (1 month), 4 young scientists (2 weeks each).
<u>Henry Sobel</u> (71)	University of California Irvine (Professor, Dept of Physics and Astronomy)	Ph.D. astropartic le physics	50%	0%	13%	37%	10/1/2007	Stays at Kamioka Branch 4 times a year. Joins videoconference once a week.	Sending 7 young scientists (3 weeks each).
Naoshi Sugiyama (53)	Nagoya University (Professor, Physics Dept)	Ph.D. cosmology	47%	0%	3%	50%	10/1/2007	Stays at Kavli IPMU once a month. Joins videoconference once a week.	

Tsutomu Yanagida (66)	Kavli IPMU (Project Professor)	Ph.D. particle theory	90%	0%	0%	10%	10/1/2007	Stays at Kavli IPMU full time.	
-----------------------	-----------------------------------	-----------------------------	-----	----	----	-----	-----------	--------------------------------	--

### **Researchers unable to participate in project in FY 2014**

Name	Affiliation (Position title, department, organization)	Starting date of project participation	Reasons	Measures taken



## Records of FY2014 Center Activities

### 1. Researchers and center staffs, satellites, partner institutions

#### 1-1. Number of researchers in the "core" established within the host institution

- Enter the total number of people in the columns below. In the "Researchers" column, put the number and percentage of overseas researchers in the < > brackets and the number and percentage of female researchers in the [ ] brackets.
- In the "Administrative staffs" column, put the number and percentage of bilingual staffs in the ( ) brackets.
- In the "Final Goal" column, enter the currently projected goal at [OO month, OO year (next year of the end of WPI grant)].

	Goal set in the "Post-interim evaluation revised center project"	Results at end of FY 2014	Final goal (Date: 4, 2016)
Researchers	213 <83, 39%> [5, 2%]	255 <105,41.2%> [15,5.9%]	213 <83, 39%> [5, 2%]
Principal investigators	22 <8, 36%> [1, 5%]	18 <4,22.2%> [1,5.6%]	22 <8, 36%> [1, 5%]
Other researchers	191 <75, 39%> [4, 2%]	237 <101,42.6%> [14, 5.9%]	191 <75, 39%> [4, 2%]
Research support staffs	28	32	28
Administrative staffs	10	10 (3, 30.0%)	10 (3,30%)
Total	251	297	251

#### Other matters of special mention

- Enter matters warranting special mention, such as concrete plans for achieving the Center's goals, established schedules for employing main researchers, particularly principal investigators.

The Kavli IPMU proceeds to increase and rejuvenate PIs in the extension period starting from FY2017. The lineup of new PI candidates on site is K. Hori, K. U. Martens, S. Matsumoto, S. Moriyama, M. Takada, Y. Toda, M. Vagins, and N. Yoshida. The other PI candidates are Y. K. Kim, leaders on the LHC experiment, to build closer collaborations between experimentalists and theorists; E. Komatsu to launch new initiatives such as LiteBIRD; Y. Nomura, who works at the Berkeley satellite to strengthen ties between research at Tokyo and Berkeley; M. Kapranov, who was attracted from Yale University as a professor of Kavli IPMU and opens a new dimension to mathematics research. In this plan, the number of PIs will increase to be 25 and their averaged age is 52 (61 for current PIs) as of 2017.

- As background to how the Center is working to mobilize/circulate the world's best brains, give good examples, if any, of how career paths are being established for the Center's researchers; that is, from which top-world research institutions do researchers come to the Center and to which research institutions do the Center's researchers go, and how long are their stays at those institutions.

By the end of FY2014, we hired 19 postdoctoral researchers including 7 JSPS fellows, and 26 had left Kavli IPMU. The hired postdocs came from different foreign university/institutes including IAS, UC Berkeley, UC Santa Cruz, King's College London, U. Edinburgh, U. Liverpool, and Korea Institute for Advanced Study. Out of 26 postdocs who left Kavli IPMU during FY2014, 9 got faculty positions including

the director of Mount Laguna Observatory, 2 got senior research fellow positions in Caltech and IBS, and 11 got another appointment as postdocs at top universities including Stanford, Cambridge/DAMTP, Imperial College London, Durham, McGill U., Vanderbilt U.

## 1-2. Satellites and partner institutions

- List the satellite and partner institutions in the table below.
- Indicate newly added and deleted institutions in the “Notes” column.
- If satellite institutions have been established, describe by satellite the Center’s achievements in coauthored papers and researcher exchanges in Appendix 4.

### <Satellite institutions>

Institution name	Principal Investigator(s), if any	Notes
University of California Berkeley	Hitoshi Murayama	

### < Partner institutions>

Institution name	Principal Investigator(s), if any	Notes
Institut des Hautes Études Scientifiques (IHES)		
Kyoto University, Yukawa Institute for Theoretical Physics		
Kyoto University, Department of Physics		
High Energy Accelerator Research Organization (KEK)	Mihoko Nojiri	
National Astronomical Observatory in Japan (NAOJ)		
Princeton University, Department of Astrophysics Sciences	David Spergel	
Tohoku University, Research Center for Neutrino Science	Kunio Inoue	

## 2. Securing competitive research funding

- Competitive and other research funding secured in FY2014:

Total: 1040M yen

- Describe external funding warranting special mention. Include the name and total amount of each grant.

32.52M yen: Program for Advancing Strategic International Networks to Accelerate the Circulation of Talented Researchers from JSPS

21M yen: LiteBIRD project from JAXA

8.45M yen: CREST Project from JST

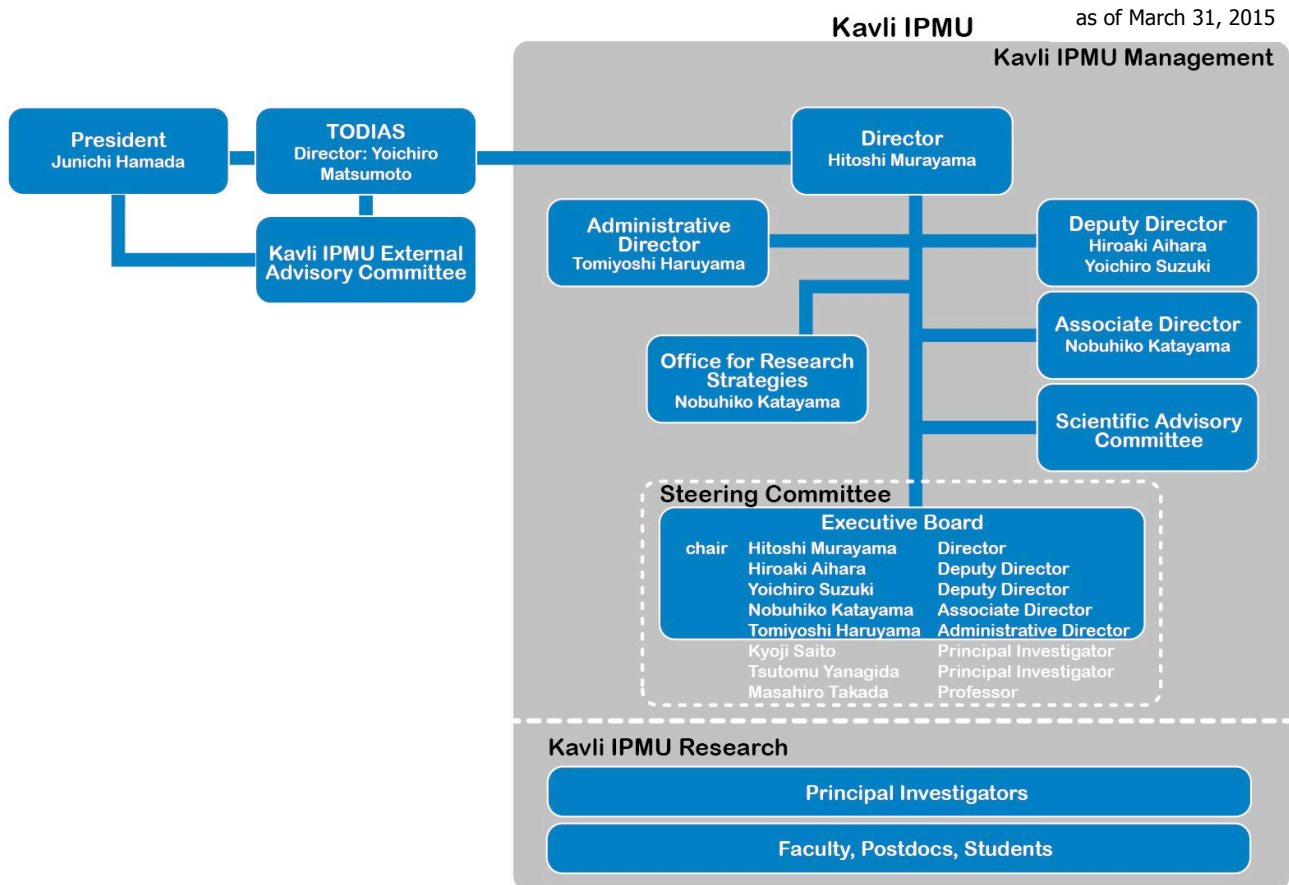
## 3. International research conferences or symposiums held to bring world’s leading researchers together

- Indicate the number of international research conferences or symposiums held in FY2014 and give up to three examples of the most representative ones using the table below.

FY 2014: 13 meetings	
Major examples (meeting title and place held)	Number of participants
“Floer and Novikov homology, contact topology and related topics” Lecture hall, Kavli IPMU	From domestic institutions: 38 From overseas institutions: 12
“The 24th Workshop on General Relativity and Gravitation (JGRG24)” Lecture hall, Kavli IPMU & Conference room, Kashiwa Research Complex2	From domestic institutions: 152 From overseas institutions: 20
“Galaxies and Cosmology in Light of Strong Lensing” Lecture hall, Kavli IPMU	From domestic institutions: 18 From overseas institutions: 48

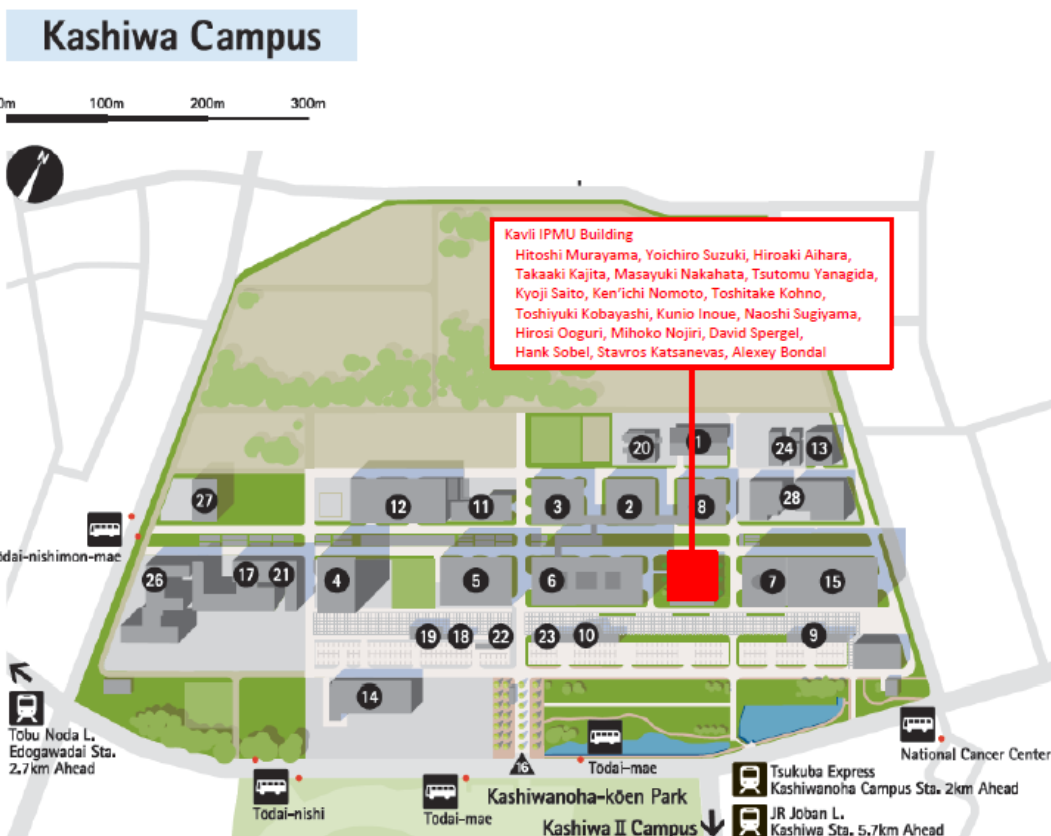
4. Center's management system

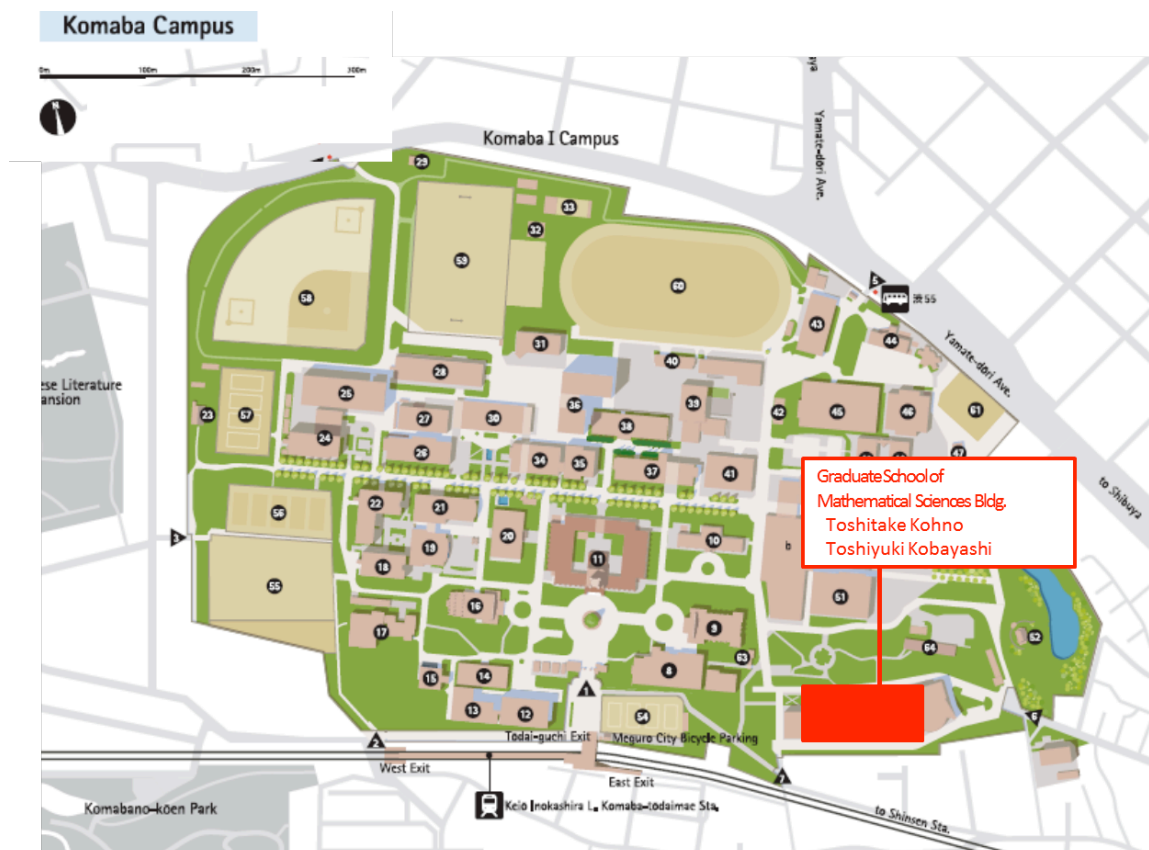
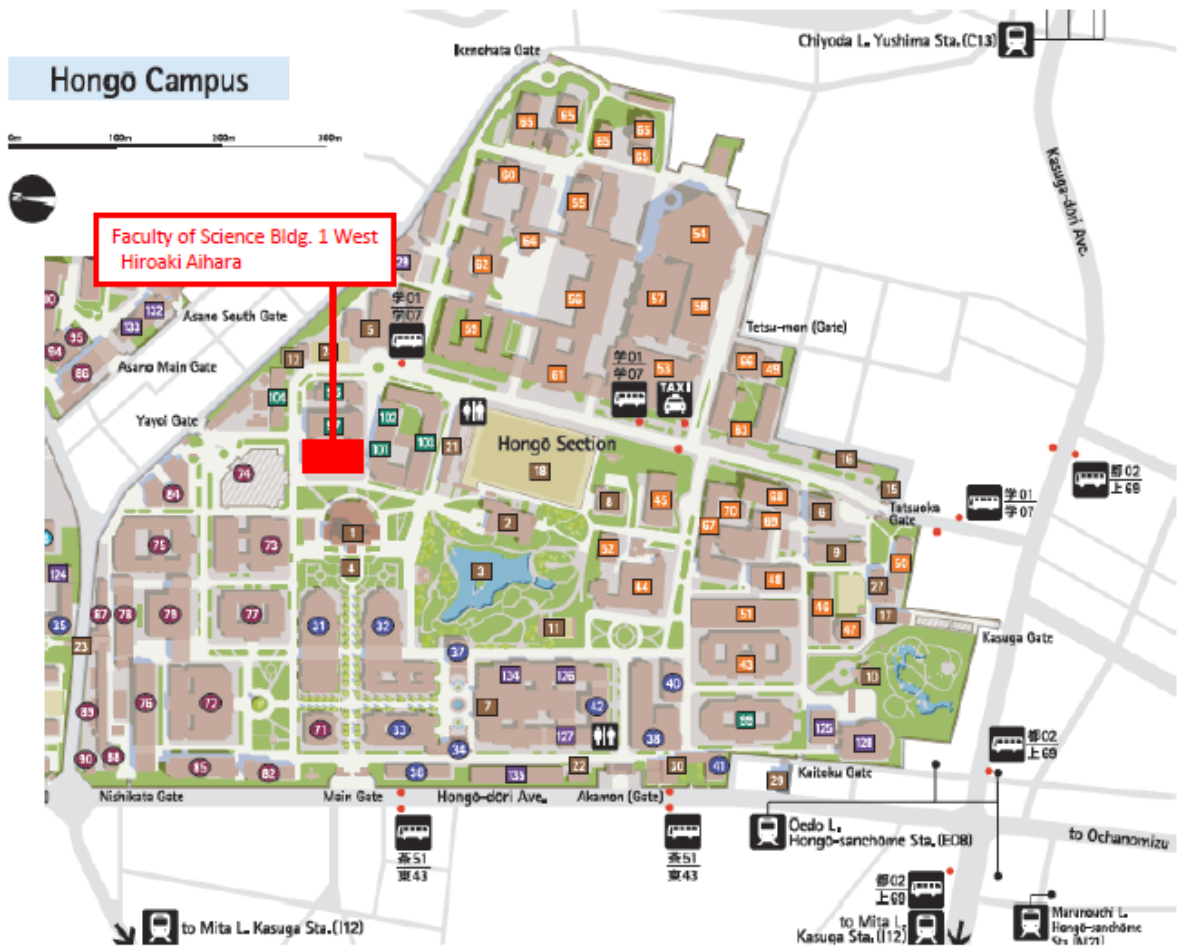
- Please diagram management system in an easily understood manner.
- If any changes have been made in the management system from that in the "Post-interim evaluation revised center project," please describe them. Please describe any changes made in the administrative director, head of host institution, and officer(s) in charge at the host institution (e.g., executive vice president for research)

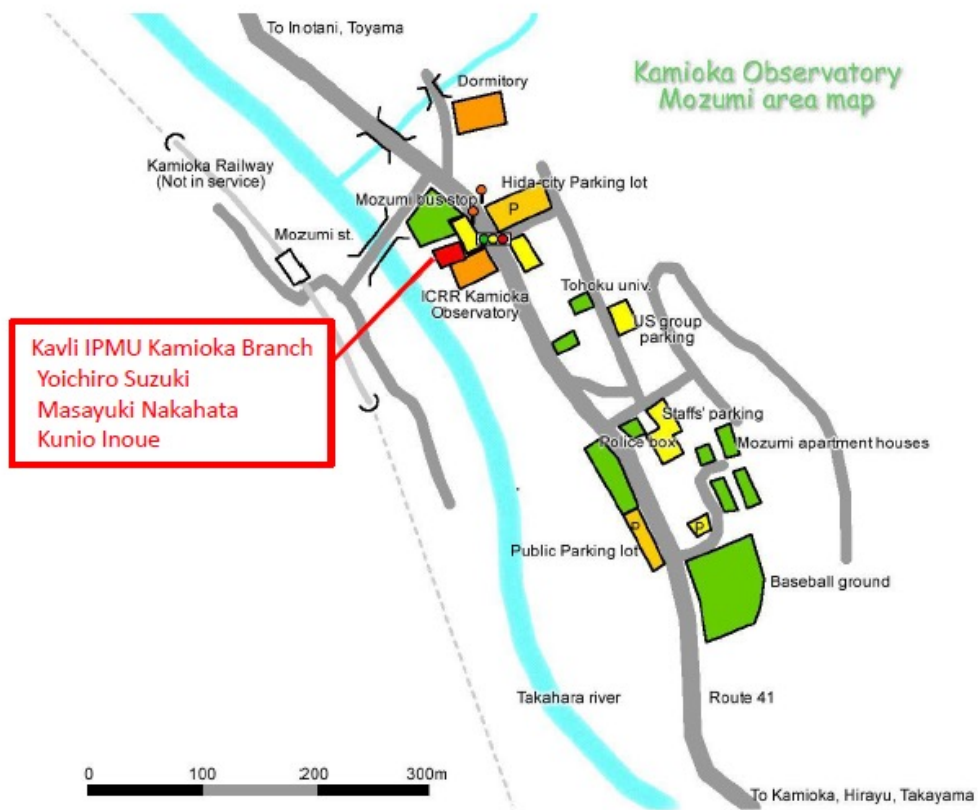


5. Campus Map

- Please draw a simple map of the campus showing where the main office and principle investigator(s) are located.







6. FY2014 Project Expenditures (the exchange rate used: 1USD=120JPY)				
i) Overall project funding			Ten thousand dollars	
Cost Items	Details	Costs (10,000 dollars)	WPI grant	1091
Personnel	Center director and Administrative director	27		
	Principal investigators (no. of persons):8	68	Costs of establishing and maintaining facilities	0
	Other researchers (no. of persons):125	606	Establishing new facilities (Number of facilities: , m <sup>2</sup> )	Costs paid:
	Research support staffs (no. of persons):32	86	Repairing facilities (Number of facilities: , m <sup>2</sup> )	Costs paid:
	Administrative staffs (no. of persons):9	64	Others	
	Total	851		
Project activities	Gratuities and honoraria paid to invited principal investigators (no. of persons):15	17	Cost of equipment procured	17
	Cost of dispatching scientists (no. of persons):0	0	Name of equipment: alpha radiation detection equipment Number of units:1	Costs paid: 9
	Research startup cost (no. of persons):58	25	Name of equipment: single analyzer Number of units:1	Costs paid: 2
	Cost of satellite organizations (no. of satellite organizations):1	10	Others	6
	Cost of international symposiums (no. of symposiums):13	2		
	Rental fees for facilities	184		
	Cost of consumables	58		
	Cost of utilities	27		
	Other costs	223		
	Total	546		
Travel	Domestic travel costs	7		
	Overseas travel costs	42		
	Travel and accommodations cost for invited scientists (no. of domestic scientists):31 (no. of overseas scientists):264	25		
	Travel cost for scientists on secondment (no. of domestic scientists):5 (no. of overseas scientists):9	3		
	Total	77		
Equipment	Depreciation of buildings	91		
	Depreciation of equipment	287		
	Total	378		
Other research projects	Projects supported by other government subsidies, etc.	486		
	Commissioned research projects, etc.	116		
	Grants-in-Aid for Scientific Research, etc.	264		
	Total	866		
	Total	2718		
ii) Costs of Satellites and Partner institutions				
Cost Items	Details	Costs (10,000 dollars)		
Personnel	Principal investigators (no. of persons):0	/		
	Other researchers (no. of persons):2			
	Research support staffs (no. of persons):0			
	Administrative staffs (no. of persons):0			
	Total	9		
Project activities		0		
Travel		1		
Equipment		0		
Other research projects		0		
	Total	10		



## Status of Collaboration with Overseas Satellites

### 1. Coauthored Papers

- List the refereed papers published in FY2014 that were coauthored between the center's researcher(s) in domestic institution(s) and overseas satellite institution(s). List them by overseas satellite institution in the below blocks.
- Transcribe data in same format as in Appendix 1. Italicize the names of authors affiliated with overseas satellite institutions.
- For reference write the Appendix 1 item number in parentheses after the item number in the blocks below. Let it free, if the paper is published in between Jan.-Mar. 2015 and not described in Appendix 1.

#### Overseas Satellite 1 (Total: 3 papers)

No.	Author names and details
1-218	GR 20 PARALLEL SESSION A3: MODIFIED GRAVITY <i>Hořava, Petr</i> ; Mohd, Arif; Melby-Thompson, Charles M.; Shawhan, Peter GENERAL RELATIVITY AND GRAVITATION 46(5), 1720, May 2014
1-	A compact ultra-clean system for deploying radioactive sources inside the KamLAND detector Banks, T. I. et al. (including <i>Fujikawa, B. K.</i> ) NUCLEAR INSTRUMENTS & METHODS IN PHYSICS RESEARCH SECTION A-ACCELERATORS SPECTROMETERS DETECTORS AND ASSOCIATED EQUIPMENT 769 pp88-96, JAN 1 2015
1-	Laboratory studies on the removal of radon-born lead from KamLAND's organic liquid scintillator Keefer, G. et al. (including <i>Fujikawa, B. K.</i> ) NUCLEAR INSTRUMENTS & METHODS IN PHYSICS RESEARCH SECTION A-ACCELERATORS SPECTROMETERS DETECTORS AND ASSOCIATED EQUIPMENT 769 pp79-87, JAN 1 2015

#### Overseas Satellite 2 (Total: 00 papers)

No.	Author names and details
2-	
2-	
2-	

## 2. Status of Researcher Exchanges

- Using the below tables, indicate the number and length of researcher exchanges in FY2014. Enter by institution and length of exchange.
- Write the number of principal investigator visits in the top of each space and the number of other researchers in the bottom.

## Overseas Satellite 1:

## &lt;To satellite&gt;

	Under 1 week	From 1 week to 1 month	From 1 month to 3 months	3 months or longer	Total
FY2014	0 3	0 5	0 0	0 1	0 9

## &lt;From satellite&gt;

	Under 1 week	From 1 week to 1 month	From 1 month to 3 months	3 months or longer	Total
FY2014	0 9	0 5	0 2	0 0	0 16

## Overseas Satellite 2:

## &lt;To satellite&gt;

	Under 1 week	From 1 week to 1 month	From 1 month to 3 months	3 months or longer	Total
FY2014					

## &lt;From satellite&gt;

	Under 1 week	From 1 week to 1 month	From 1 month to 3 months	3 months or longer	Total
FY2014					

## FY 2014 Visit Records of World Top-caliber Researchers from Abroad

Researchers Total: 41

Name (Age)	Affiliation (Position title, department, organization)	Academic degree, specialty	Record of research activities (Awards record, etc.)	Time, duration	Summary of activities during stay at center (e.g., participation as principal investigator; short-term stay for joint research; participation in symposium)
Edward Witten (63)	Professor, School of Natural Sciences, Institute for Advanced Study	Ph.D. Physics	Dirac Medal (1985), Albert Einstein Medal (1985), Fields Medal (1990), Alan T. Waterman Award (1995), Dannie Heineman Prize (1998), Nemmers Prize (2000), National Medal of Science (2002), Harvey Prize (2005), Henri Poincaré Prize (2006), Crafoord Prize (2008), Lorentz Medal (2010), Isaac Newton Medal (2010), Fundamental Physics Prize (2012), Kyoto Prize (2014)	2014/11/19 -2014/11/23	Short-term stay for joint research and giving talks at the Kavli IPMU seminar and colloquium
Freeman Dyson (91)	Professor emeritus, School of Natural Sciences, Institute for Advanced Study	B.A. Mathematics	Danny Heinemann Prize (1965), Phi Beta Kappa Award in Science (1988), Oersted Medal (1991), Enrico Fermi Award (1993), Lewis Thomas Prize (1996), Templeton Prize for Progress in Religion (2000), Henri Poincaré Prize (2012)	2014/4/15 - 2014/4/23	Short-term stay for joint research and giving a talk at the Kavli IPMU colloquium
John Ellis (68)	Clerk Maxwell Professor of Theoretical Physics, King's College London	Ph.D. Theoretical Particle Physics	Maxwell Medal and Prize (1982), Paul Dirac Medal and prize (2005), Fellow of the Royal Society of London (since 1985), Fellow of the Institute of Physics (since 1991), Commander of the Order of the British Empire (2012)	2014/6/29 - 2014/7/2	Participation in External Advisory Committee

Steven Kahn (59)	Cassius Lamb Kirk Professor in the Natural Sciences, Stanford U & SLAC	Ph.D. Cosmology	Fellow of the American Physical Society (Since 1991) Member of AAAS (since 2012)	2014/6/29 - 2014/7/2	Participation in External Advisory Committee
Young-Kee Kim (52)	Deputy Director, Theoretical Physics Department, Femi National Accelerator Laboratory	Ph.D. Physics	Ho-Am Prize (2005), South Korean government Science/Education Service Medal (2008), Rochester Distinguished Scholar Medal (2010) AAAS fellow (2012-) Leadership Award, Women in Science, Chicago Council of Science and Technology (2012)	2014/6/29 - 2014/7/2	Participation in External Advisory Committee
Peter Goddard (69)	Professor, School of Natural Sciences, Institute for Advanced Study	Ph.D. Physics	Dirac Prize and Medal (1997) Commander of the Order of the British Empire (2002) Director of IAS (2004-12) Honorary Fellow, Trinity College, Cambridge (since 2009), Honorary Fellow, Isaac Newton Institute for Mathematical Sciences (since 2011, Senior Fellow 1994-2010)	2014/3/26 - 2014/4/3	Short time stay for joint research and giving a talk at Kavli IPMU colloquium
Rashid Sunyaev (72)	Director, Max Plank Institute for Astrophysics, Garching	Ph.D. Astrophysics	Bruno Rossi Prize (1989), Gold Medal of the Royal Astronomical Society (1995), Bruce Medal (2000), Alexander Friedman Prize (2002), Heineman Prize (2003), Gruber Prize in Cosmology (2003), Crafoord Prize (2008), Karl Schwarzschild Medal (2008), Kyoto Prize (2011), Benjamin Franklin Medal in Physics (2012)	2014/12/8-2014/12/13	Short-time stay for joint research and giving lectures at Kavli IPMU

Matias Zaldarriaga (43)	Professor of astrophysics, Institute for Advanced Study	Ph.D. Physics	Helen B. Warner Prize (2003), Gribov Medal (2005), MacArthur Fellowship (2006)	2014/6/9 - 2014/6/13	Giving lectures at Kavli IPMU
Wayne Hu	Professor, The Kavli Institute for Cosmological Physics, U. Chicago	Ph.D. Physics	Warner Prize (2000)	2014/12/7-2014/12/24	Short-time stay for joint research and giving lectures at Kavli IPMU
Kate Scholberg	Professor Duke University	Ph.D. Physics	National Science Foundation CAREER Award, Outstanding Junior Investigator award from the department of energy	2014/11/11-2014/11/17	Short-time stay for joint research
Michel Gonin (55)	Research director at CNRS, Professor at Leprince-Ringuet Laboratory of Ecole Polytechnique	Ph.D. Nuclear Physics	CNRS Silver Medal 2000	2015/1/28-2015/1/31	Participation in Workshop
Reynald Pain (57)	Director of the Laboratoire de Physique Nucléaire et des Hautes Energies, Université Pierre et Marie Curie, Université Paris-Diderot, CNRS/IN2P3	Ph.D. Physics	Joliot Curie award (1999) Cosmology prize of the Gruber Foundation (2007)	2014/10/20-2014/10/23	Giving a talk at the Kavli IPMU seminar
David R. Morrison (59)	Professor, UC Santa Barbara	Ph.D. Mathematics	AMS Fellow (2013-) APS Fellow (2014-)	2014/6/29-2014/7/1	Participation in External Advisory committee
Bryan Webber (71)	Emeritus Professor of Theoretical Physics, U. Cambridge	Ph.D. Physics	Fellow of the Institute of Physics (1987) Fellow of the Royal Society (2001) Dirac medal (2008) J.J. Sakurai Prize (2012)	2014/2/17-2014/5/16	Long-time stay for joint research
Ruth Durrer (57)	Professor, Département de Physique Théorique, Université de Genève	Ph.D. Physics	The Schlaefli Award of the Swiss Academy of Sciences, 1992	2014/7/7-2014/7/9	Giving a talk at the Kavli IPMU seminar

Yasuo Tanaka (84)	Guest scientist at the Max Planck Institute for Extraterrestrial Physics, Professor emeritus at JAXA Director, Bonn Office of Japan Society for the Promotion of Science	Ph.D. Physics	Nishina Memorial Prize (1985), Toray Science and Technology Prize (1988), Japan Imperial Prize and Academy Prize (1993), James Craig Watson Medal (1994), Alexander von Humboldt Research Prize (1994), Bruno Rossi Prize (2001), Emperor's Order of the Sacred Treasure, 2nd class (2002). Massay Award (2004), Person of Cultural Merit (2011)	2014/6/16-2014/6/17 2014/10/21-2014/10/23	Short-time stay for joint research
Boris Hasselblatt (53)	Professor, Tufts University	Ph.D. Mathematics		2014/6/3	Giving a talk at the Kavli IPMU seminar
Michael E. Peskin (63)	Professor, SLAC National Accelerator Laboratory	Ph.D. Physics	AAAS fellow (since 2009)	2015/2/18	Giving a talk at the Kavli IPMU seminar
Yongbin Ruan (52)	William Fulton Collegiate Professor in U. Michigan	Ph.D. Mathematics	Sloan Fellow (1995-1997) invited speaker at the 1998 I.C.M in Berlin	2014/7/23-2014/7/27	Short-time stay for joint research
Mario Hamuy	Professor of Astronomy at the University of Chile and Cerro Calan Observatory	Ph.D. Astronomy	Guggenheim Scholarship (2011)	2014/10/16-2014/10/17	Giving a talk at the Kavli IPMU seminar
Akikazu Hashimoto	Professor, University of Wisconsin-Madison	Ph.D. Physics	2006 Soryushi Medal Shorei Prize	2014/9/1 2015/1/6-2015/1/10	Giving a talk at the Kavli IPMU seminar
Shude Mao (48)	Professor of astrophysics, Jodrell Bank Observatory, U Manchester	Ph.D. Astrophysics	USTC – Hua-xing Prize (1988) Friedrich Wilhelm Bessel Research Award (2007)	2014/11/16-2014/11/22	Participation in Conference

Henry W. Sobel (71)	Professor, Physics & Astronomy School of Physical Sciences, UC Irvine	Ph.D. Astroparticle Physics	Rossi Prize (1989) Asahi Prize (1999) Fellow of American Physical Society (since 1998) Fellow of AAAS (since 2008) Pontecorvo Prize 2009	2014/8/20- 2014/8/29 2014/11/11- 2014/11/16 2015/1/28- 2015/1/31	Short-time stay for joint research as a PI of Kavli IPMU Participation in Meeting
Simon J. Lilly	Deputy Head of Institute for Astronomy in Department of Physics at ETH Zürich.	Ph.D. Astronomy	Fellow of the Royal Society (2014-)	2015/2/1- 2015/2/8	Participation in Workshop
Francois R. Bouchet	CNRS research director, Institut d'Astrophysiqu e de Paris	DEA (Diploma of Advanced Studies) Physics	Grand Prix de l'Association Aéronautique et Astronautique de France à l'équipe Planck-Hersche Prix ARRI du Rayonnement Français. 2011 Prix scientifique de la fondation Louis D. (grand prix de l'Institut de France) 2014	2014/11/10- 2014/11/14	Participation in Workshop
Eiichiro Komatsu (40)	Director, Max Planck Institute for Astrophysics	Ph.D. Astronomy	Nishinomiya-Yukaw a Memorial Prize 2010 Gruber Cosmology Prize 2012 Chushiro Hayashi Prize 2015	2014/10/27- 2014/12/26	Participation in Workshop and long-time stay for joint reserach
Reynald Pain (57)	Research director at CNRS	Ph.D. Particle Physics	Cosmology prize of the Gruber Foundation 2007,	2014/10/20- 2014/10/23	Giving a talk at the Kavli IPMU seminar
John Martin	Professor and IPP Principal Research Scientist, Emeritus	Ph.D. Experimental Particle Physics	2015 CANADIAN ASSOCIATION OF PHYSICISTS Medal	2015/1/28- 2015/1/31	Participation in Workshop
Ragnar Buchweitz	Professor U Toronto	Ph.D. Mathematics	Humbolt Research Fellowship, 2010	2014/9/1- 2014/9/2	Short-time stay for joint research
Vadim Schechtman	Professor Universit Paul Sabatier	Ph.D. Mathematics	invited speaker for ICM 2002 (Beijing)	2014/10/27- 2014/11/4	Giving a talk at the Kavli IPMU seminar
David Valls-Gabaud	Research Director at CNRS	Ph.D. Astrophysics	Senior International Professorship by the Chinese Academy of Sciences	2014/10/23	Giving a talk at the Kavli IPMU seminar

Nigel Smith	Director at SNOLAB, Adjunct Professor of Laurentian University, Adjunct Professor of Queen's University	Ph.D. Astrophysics		2014/6/29-2014/7/1	Participation in External Advisory committee
Adrian T. Lee	Professor in UC Berkeley	Ph.D. Experimental Astrophysics		2014/10/29	Short-time stay for joint research
Ravi Sheth	Professor in Department of Physics and Astronomy at U Penn	Ph.D. Astrophysics		2014/4/20-2014/5/2	Giving a talk at the Kavli IPMU seminar
Ruben Minasian	Reserach director, Institut de Physique Théorique	Ph.D. physics		2014/4/21-2014/4/25	Giving a talk at the Kavli IPMU seminar
Marta Volonteri	Research director, Institute d'Astrophysique de Paris	Ph.D. Astronomy		2014/4/6-2014/4/13	Participation in Workshop
Jooyoung Lee	Director of Center for In Silico Protein Science, KIAS	Ph.D. Physics		2014/11/6	Participation in Symposium
Eric Linder	Co-Director, Institute for Nuclear and Particle Astrophysics, LBNL	Ph.D. Physics		2014/7/9-2014/7/15	Short-time stay for joint research and giving a talk at the Kavli IPMU seminar
Jacques Delabrouille	Directeur de Recherches CNRS	Ph.D. Cosmology		2014/10/29	Giving a talk at the Kavli IPMU seminar
Ivan Cheltsov (41)	Chair of birational geoemtry, U Edinburgh	Ph.D. Mathematics		2014/4/13-2014/4/20	Giving a talk at the Kavli IPMU seminar
Raphael Bousso	Professor at Department of Physics, UC Berkeley	Ph.D. Particle Physics		2015/3/22-2015/3/28	Short-time stay for joint research



## State of Outreach Activities

- Using the table below, show the achievements of the Center's outreach activities in FY2014(number of activities, times held).
- Describe those activities that have yielded novel results or that warrant special mention in the "Special Achievements" space below.
- In appendix 7, list and describe media coverage (e.g., articles published, programs aired) in FY2014 resulting from press releases and reporting.

Activities	FY2014 (number of activities, times held)
PR brochure, pamphlet	7
Lectures, seminars for general public	8
Teaching, experiments, training for elementary and secondary school students	8
Science cafe	5
Open houses	1
Participating, exhibiting in events	4
Press releases	31

### Special Achievements

#### **WPI Collaborative Outreach Activities**

- The Fourth Annual WPI Joint Symposium
  - The Kavli IPMU hosted this annual event in Tokyo on Dec 13, 2014. The event gave high school students an opportunity to hear about the latest developments in science and technology. Researchers from all nine WPI institutes, many of them from overseas, were happy to talk about their research to the participating high school students. Surveys from participants indicated that many students found the event to be inspiring. The event included:
    - Talks by three speakers, including Kavli IPMU Director H. Murayama.
    - Presentations and poster presentation sessions by high school students from seven schools.
    - At the booth hall, a Kavli IPMU public relations officer and a woman researcher talked about the institute to participants.
    - Unveiling of a promotional video featuring men and women talking about the research they are doing, and the WPI research institute environment in which they work in.

#### **Transdisciplinary engagement**

- Science Onsen (public event at Kashiwa Open Campus): Oct 24 - 25, 2014
- Science Onsen (event at Science Agora, venue: Miraikan): Nov 9, 2014
  - The purpose of Science Onsen was to get scientists to describe what makes science interesting while talking to a professional working in a field different to their own. Kavli IPMU physicist talked to a photographer during the first day of the Open Campus Kashiwa event, and also he talked to a painter during the Science Agora event. Positive feedback was received regarding the talk between a mathematician and a physicist on the second day of Open Campus Kashiwa. Although there was little chance to deal with the transdisciplinary work between physics and mathematics in public events, they succeed to speak about it in a familiar way to general audience.
- "Interview with Edward Witten"
  - An interview between mathematicians and physicists was published in the Kavli IPMU PR magazine "Kavli IPMU News". The article gains great popularity.
- This article was also published in the May 2015 issue of Notices of the American Mathematical Society, which has helped to emphasize the transdisciplinary research being carried out at the Kavli IPMU.

#### **Cutting edge science explanatory video development**

- Explain a research paper in three minutes

Uploaded a video of a researcher explaining the meaning of a mathematics research paper to the Internet, giving a wider audience access to learn about a recent breakthrough in mathematics.

### Promotional video shown at the American Physical Society (APS) Annual Meeting

APS had contacted the Kavli IPMU to produce a seven-minute video focusing on the every day work of six Kavli IPMU researchers including our Director H. Murayama. The video introduces their research life at the Kavli IPMU and was shown at the APS Annual Meeting in San Antonio, Texas (Mar 2 – 6, 2015). The video has been played about 20,000 times on the Internet, and can be viewed at the Kavli IPMU website and YouTube channel.

### Social Network Service (SNS) Usage

- Blog
  - Hirosi Ooguri: <http://planck.exblog.jp/> (since Jan 2009)
- Facebook
  - Kavli IPMU (account name: KavliIpmu): [www.facebook.com/KavliIpmu](http://www.facebook.com/KavliIpmu) (since Sep 2009)
  - Hitoshi Murayama (account name: Hitoshi Murayama-Kavli IPMU): [www.facebook.com/pages/Hitoshi-Murayama-Kavli-IPMU/289807884480621](http://www.facebook.com/pages/Hitoshi-Murayama-Kavli-IPMU/289807884480621) (since Feb 2013)
- Twitter
  - Hirosi Ooguri (account name: PlanckScale), since Sep 2009
  - Hitoshi Murayama (account name: sleptogenesis), since Jan 2010

### Books published in 2014:

“The World As Seen In The Language of Mathematics (数学の言葉で世界を見たら 父から娘に贈る数学)”  
by Hirosi Ooguri  
Published on Mar 2015, Gentosha Inc., 6,000 copies published

“The Experiment that Made the Universe (宇宙を創る実験)” by Hitoshi Murayama  
Published on Dec 2014, Shueisha Inc., 15,000 copies published

### Other best sellers

“Introduction to Superstring Theory (大栗先生の超弦理論入門 九次元世界にあった究極の理論)”  
by Hirosi Ooguri  
Published Aug 2013, Kodansha Inc., 38,700 copies published  
\* This book received the 30<sup>th</sup> Kodansha Science Publication Award in Sep 2014  
A Chinese version is set to be released in Jan 2015

“Why Do We Exist (宇宙になぜ我々が存在するのか)” by Hitoshi Murayama  
Published Jan 2013, Kodansha Inc., 70,358 copies published

“Strong Forces and Weak Forces: Unlocking the Magic that the Higgs Particle has Cast on the Universe (強い力と弱い力～ヒッグス粒子が宇宙にかけた魔法を解く～)” by Hirosi Ooguri  
Published Jan 2013, Gentosha Inc., 20,000 copies published

“What is Gravity? (重力とは何か?)” by Hirosi Ooguri  
Published May 2012, Gentosha Inc., 150,000 copies published

“Is There Really Only One Universe (宇宙は本当にひとつなのか)” by Hitoshi Murayama  
Published Jul 2011, Kodansha Inc., 108,608 copies published

“How is the Universe This Complete (宇宙はなぜこんなにうまくできているのか)” by Hitoshi Murayama  
Published Jan 2012, Shueisha Inc., 29,000 copies published

“What is the Universe Made Of? (宇宙は何でできているのか)” by Hitoshi Murayama  
Published Sep 2010, Gentosha Inc., 317,000 copies published

## FY 2014 List of Project's Media Coverage

- Select main items of coverage, and list them within these 2 pages.

No.	Date	Type media (e.g., newspaper, television)	Description
1	2014/4/1	Highlighting Japan (magazine produced by the Cabinet Office for overseas distribution)	"The SuMIRE Project" Story introduces the Subaru Measurement of Images and Redshifts (SuMIRE) project.
2	2014/4/3	Yomiuri Shimbun	"The 27 Largescale Research Plans to Watch (重点大型研究 27 計画選ぶ)" Story mentions the Hyper-Kamiokande
3	2014/4/13	Nikkei Shimbun	"Cosmic Inflation: a background (宇宙の急膨張裏付け)" Story is about the BICEP2 project results. The article also mentions the LiteBIRD plan.
4	2014/4/21	Asahi Shimbun	"The beginning of the space we see (見えた宇宙の始まり)" article is about the BICEP2 project results. Story features comment by Kavli IPMU director Hitoshi Murayama, and mentions the LiteBIRD plan.
5	2014/4/25	NHK News	"Gravitational Lensing: the effect that makes stars appear brighter (『重力レンズ』効果 星が明るく見える)" Story about Kavli IPMU Project Researcher Robert Quimby and his team's latest research result.
6	2014/4/25	BBC News PHYS.ORG National Geographic New Scientist 新華網 Science Newline	"Mystery of dazzling supernova solved" (BBC News) Story about Kavli IPMU Project Researcher Robert Quimby and his team's latest research result.
7	2014/4/30	Asahi Shimbun (online) Asahi Shimbun	"Lensing effect of a galaxy: the battle UTokyo won against the US (『銀河にレンズ効果』超新星巡る日米論争、東大に軍配)" Story about Kavli IPMU Project Researcher Robert Quimby and his team's latest research result.
8	2014/5/4	Akita Sakigake	"Yukinobu Toda wins Shunki Award from Mathematical Society of Japan (日本数学会の春季賞を受賞 戸田幸伸さん)" Story about Kavli IPMU associate professor Yukinobu Toda's award win
9	2014/5/15	Tokyo Shimbun 47NEWS Nishinihon Shimbun	"Theoretical physicist Ooguri named founding director of new institute in Caltech (理論物理、初代研究所長に大栗氏 カリフォルニア工科大が新設置)" Story about Kavli IPMU principal investigator Hiroshi Ooguri's new position at the Walter Burke Institute for Theoretical Physics
10	2014/5/15	NHK show "Cosmic Front"	"Supernova 1987A (超新星1987A)" Interview with Kavli IPMU principal investigator and project professor Ken'ichi Nomoto
11	2014/5/31	NHK BS	"Want to know everything! AtoZ will show you! On the frontline of Japan science (まるごと知りたい! AtoZ 見せます! 日本の先端研究最前線)" Show introduced the Kavli IPMU

12	2014/7/27	Yomiuri Shimbun	"Yomiuri Tech Forum: 2 Experts explain the challenge to uncover the mystery of the universe (読売テクノ・フォーラム 宇宙の謎への挑戦 専門家2人が解説)" Story about the event Kavli IPMU director Hitoshi Murayama had spoken at the Yomiuri Tech Forum on July 26
13	2014/9/2	Nikkei Shimbun	"Site of an earth-like birth? Find UTokyo and others (『地球型』誕生の現場か 東大など)" Story about Kavli IPMU project researcher Wiphu Rujopakarn and his team's latest research results.
14	2014/9/11	Yahoo! News (UK & Ireland) ScienceDaily PHYS.ORG	"NASA's Hubble: Bright Blue Star Discovered Reveals Missing Piece of Supernova Puzzle" (Yahoo! News). Story about Kavli IPMU project researcher Gastón Folatelli and his team's latest research results.
15	2014/9/24	ScienceDaily PHYS.ORG	"Most metal-poor star hints at universe's first supernovae" (ScienceDaily). Story about JSPS Fellow Miho Ishigaki and her team's latest research results.
16	2014/9/25	Asahi Shimbun	"Yellow but it is still a supernova explosion (黄色でも超新星爆発)" Story about Kavli IPMU project researcher Gastón Folatelli and his team's latest research results.
17	2014/10/4	PHYS.ORG ScienceDaily Science Newsline	"A warm dark matter search using XMASS: Editors' suggestion of Physical Review Letters" (PHYS.ORG) Story about latest XMASS project results lead by Kavli IPMU Deputy Director Yoichiro Suzuki.
18	2014/11/4	Nikkei Sangyo Shimbun	"Capturing the effects of gravitational lensing (『重カレンズ』の影響捉える)" Story about the latest results from POLARBEAR experiment.
19	2014/12/23	NHK WORLD	"Post-Higgs Boson Launching a Linear Collider" Show developed with the help of Kavli IPMU director Hitoshi Murayama. Selected for the Viewers' Choice Awards 2014.
20	2015/1/1	Asahi Shimbun	"Searching for light (光を探る)" Story featuring comment from Kavli IPMU director Hitoshi Murayama
21	2015/1/13	SciTechDaily PHYS.ORG ScienceDaily	"Understanding the Gravitation Evolution of Dark Matter Halos" (SciTechDaily) Story about Kavli IPMU project researcher Shun Saito and project researcher Teppei Okumura's latest research results.
22	2015/2/10	Newton	"Latest theories looking at the end of the universe: Special interview with Dr Hitoshi Murayama (宇宙の果てをめぐる最新宇宙論;特別インタビュー 村山斉博士)" Interview with Kavli IPMU director Hitoshi Murayama
23	2015/3/9	Yomiuri Shimbun Yomiuri Shimbun (Osaka)	"Einstein's Legacy: 100 years since the birth of the General Relativity Theory. (アインシュタインの遺産 (上) = 『一般相対論』誕生100年 『宇宙は発展』へ見方一変)" Story features comment from Kavli IPMU director Hitoshi Murayama
24	2015/3/30	Asahi Shimbun	"The universe track field: a relay to measure the distance to far away stars (宇宙の距離はしご 遠い星まで測定法をリレー)" Story features comment from Kavli IPMU project assistant professor Nao Suzuki