

Report for JSPS - FAPESP Joint Research Workshop FY 2018Date March 6th, 2019

1. Title of Workshop Cosmological challenges to dark matter, dark energy and galaxy formation
 URL <http://fma.if.usp.br/~abramo/FAPESP-JSPS/index.html>

2. Purpose of Workshop

The recent series of exciting new developments in cosmology and astrophysics has been driven by multi-national observational efforts. The purpose of this workshop is to bring together young researchers from both countries and have them identify the key problems that are worth tackling in near future. The participants and mentors will bring fresh new ideas about the identifications of dark matter and dark energy, the origin and nature of the first objects, and how they could have evolved into the structures we observe today. We will also discuss how to test new ideas with observational projects involving both countries, encouraging young researchers to team together to collaborate in those projects.

3. Period

From February 18, 2019 through February 20, 2019 (3 days)

4. Venue

Physics Institute, University of Sao Paulo

5. Organization

(1) Cosponsors

Japan Side	Japan Society for the Promotion of Science (JSPS)
	Tokyo Institute of Technology
Brazil Side	São Paulo Research Foundation (FAPESP)
	University of Sao Paulo

(2) Coordinator

1) Japan side

Name in full Masahide YamaguchiAffiliation and Position Tokyo Institute of Technology, School of Science, Professor

2) Brazil side

Name in full Luis Raul Abramo

Affiliation and Position University of Sao Paulo, Physics Institute, Professor

6. Program: Agenda, Topics, Related Activities (e.g., Reception, Excursion)

<http://fma.if.usp.br/~abramo/FAPESP-JSPS/program.html>

Workshop Title:

Cosmological challenges to dark matter, dark energy and galaxy formation

Host Institute and Venue:

The Physics Institute, The University of Sao Paulo

Period

February 18th (Mon), 2019 --- February 20th (Wed), 2019

Organizers:

Luis Raul Abramo (Chair), Masahide Yamaguchi (Co-chair), Elcio Abdalla, Carlos Alexandre Wuensche, Roderik Overzier, Masami Ouchi, Tomo Takahashi, Teruaki Suyama

Reception:

We had an evening reception party when Japanese participants arrive at Brazil (on February 17th).

Excursion:

We sponsored an excursion to a guided tour of the Sao Paulo Botanical Gardens (on February 19th).

Banquet:

We had banquets at two night (February 19th and 20th) of the workshop.

7. Mentors and Participants

1) Number of Participants

	Lecturers	Participants	Others *	Total
Japan side	3	15	1	19
Brazil side	3	2	16	21
Other persons			2	2
Total	6	17	19	42

*Please include the number of participants who were not supported by this program funding.

2) List

A: Mentors

Japan side

Name in full	Affiliation/ Institution	Position	Specialty
Masami Ouchi	University of Tokyo, ICRR	Associate Professor	Astrophysics and observational cosmology
Tomo Takahashi	Saga University, Faculty of Science and Engineering	Associate Professor	Cosmology and particle physics
Teruaki Suyama	Tokyo Institute of Technology, School of Science	Associate Professor	Modified gravity and cosmology

Brazil Side

name in full	Affiliation/ Institution	Position	Specialty
Elcio Abdalla	University of Sao Paulo, Physics Institute	Professor	Cosmology, Field Theory
Carlos Alexandre Wuensche	INPE (National Institute for Space Research)	Full Scientist and Head of the Cosmology Division	Radio astronomy, experimental and theoretical cosmology
Roderik Overzier	National Observatory	Associate Researcher	Observational cosmology, Astrophysics

B: Participants

List of participants on the Japanese side

No	姓	名	所属機関・部局	職名	所属国名	備考 ²⁾
No	Family Name	Name	Affiliation	Job Title	Country ¹⁾	Note ²⁾
1	山口	昌英	東京工業大学・理学院	教授	日本	*
1	Yamaguch	Masahide	Tokyo Institute of Technology, School of Science	Professor	Japan	
2	大内	正己	東京大学・宇宙線研究所	准教授	日本	*
2	Ouchi	Masami	University of Tokyo, ICRR	Associate Professor	Japan	
3	高橋	智	佐賀大学・理工学部	准教授	日本	*
3	Takahashi	Tomo	Saga University, Faculty of Science and Engineering	Associate Professor	Japan	
4	須山	輝明	東京工業大学・理学院	准教授	日本	*
4	Suyama	Teruaki	Tokyo Institute of Technology, School of Science	Associate Professor	Japan	
5	北嶋	直弥	名古屋大学・大学院理学研究科	特別研究員 (PD)	日本	*
5	Kitajima	Naoya	Nagoya University, Graduate School of Science	Post-doctoral researcher	Japan	
6	小幡	一平	東京大学・宇宙線研究所	博士研究員	日本	*
6	Obata	Ippei	University of Tokyo, ICRR	Post-doctoral researcher	Japan	
7	多田	祐一郎	名古屋大学・大学院理学研究科	特別研究員 (PD)	日本	*

7	Tada	Yuichiro	Nagoya University, Graduate School of Science	Post-doctoral researcher	Japan	
8	藤田	智弘	ジュネーブ大学・ 物理学科、 京都大学・大学院理学 研究科	研究員	日本	*
8	Fujita	Tomohiro	University of Geneva, Department of Theoretical Physics, Kyoto University, Department of Physics	Post-doctoral researcher	Japan	
9	樫山	和己	東京大学・大学院理学系 研究科附属ビックバン 宇宙国際研究センター	助教	日本	*
9	Kashiyama	Kazumi	University of Tokyo, RESCEU	Assistant Professor	Japan	
10	Chibana	Fabio	東京工業大学・理学院	博士課程	日本	
10	Chibana	Fabio	Tokyo Institute of Technology, School of Science	Ph.D. student	Japan	
11	木村	蘭平	早稲田大学・ 高等研究所	講師	日本	*
11	Kimura	Rampeï	Waseda Institute for Advanced Study (WIAS)	Associate Professor (Lecturer)	Japan	
12	榊原	由貴	関西学院大学・ 大学院理工学研究科	博士研究員	日本	*
12	Sakakihara	Yuki	Kwansei Gakuin University, Graduate School of Science and Technology	Post-doctoral researcher	Japan	
13	関口	豊和	東京大学・大学院理学系 研究科附属ビックバン 宇宙国際研究センター	助教	日本	*
13	Sekiguchi	Toyokazu	University of Tokyo, RESCEU	Assistant Professor	Japan	
14	山内	大介	神奈川大学・工学部	助教	日本	*
14	Yamauch	Daisuke	Kanagawa University, Faculty of Engineering	Assistant Professor	Japan	
15	馬渡	健	東京大学・ 宇宙線研究所	特任研究員	日本	*
15	Mawatari	Ken	University of Tokyo, ICRR	Post-doctoral researcher	Japan	
16	利川	潤	東京大学・宇宙線研究所	特別研究員 (PD)	日本	*
16	Toshikawa	Jun	University of Tokyo, ICRR	Post-doctoral researcher	Japan	
17	津村	耕司	東北大学・学際科学 フロンティア研究所	助教	日本	*

17	Tsumura	Kohji	Tohoku University, The Frontier Research Institute for Interdisciplinary Sciences	Assistant Professor	Japan	
18	鄭	昇明	東北大学・理学系研究科	学術研究員	日本	*
18	Chon	Sunmyon	Tohoku University, Graduate School of Science and Faculty of Science	Post-doctoral researcher	Japan	
19	平野	信吾	九州大学・理学研究院	特別研究員 (PD)	日本	*
19	Hirano	Singo	Kyushu University, Faculty of Science	Post-doctoral researcher	Japan	
20	矢島	秀伸	筑波大学・計算科学研究センター	准教授	日本	*
20	Yajima	Hidenobu	Tsukuba University, Center for Computational Sciences	Associate Professor	Japan	

1) 参加者が所属する機関の所在国を記入してください。

2) 本ワークショップ経費にて参加される方については、備考欄に「*」を記入してください。

List of participants on the Brazilian side

No.	Family Name	Name	Affiliation	Job Title	Country ¹⁾	Note ²⁾
1	Abramo	Raul	Physics/ USP	Professor	Brazil	
2	Abdalla	Elcio	Physics/ USP	Professor	Brazil	
3	Overzier	Roderik	ON and Astronomy/ USP	Associate Researcher	Brazil	
4	Wuensche	Alex	INPE	Full Scientist and Head of the Cosmology Division	Brazil	*
5	Iocco	Fabio	ICTP-SAIFR	Associate Researcher	Brazil	
6	Troja	Antonino	ICTP-SAIFR	Post-doctoral researcher	Brazil	
7	Castaño	María Benito	ICTP-SAIFR	Ph.D.	Brazil	
8	Nastase	Horatiu	Physics/ IFT-Unesp	Professor	Brazil	
9	Santos	Edivaldo Moura	Physics/USP	Professor	Brazil	
10	Albuquerque	Ivone	Physics/USP	Professor	Brazil	
11	Queiroz	Carolina	Physics/USP	Ph.D. candidate	Brazil	
12	Fornazier	Karin	Physics/USP	Post-doctoral researcher	Brazil	

13	Montero-Dort	Antonio	Physics/USP	Post-doctoral researcher	Brazil	
14	Aion	Viana	Physics/USP São Carlos	Post-doctoral researcher	Brazil	*
15	Santos	Larissa	USTC & CAS, China	Post-doctoral researcher	China	
16	Furlanetto	Cristina	Astronomy/ UFRGS	Professor	Brazil	
17	Luis Dors Jr.	Oli	Astronomy/ UNIVAP	Professor	Brazil	*
18	Gomes	Adalto Rodrigues	Physics/ UFMA	Professor	Brazil	
19	Vitorelli	André Zamorano	Astronomy/ USP	Ph.D. student	Brazil	
20	Tadeu Arantes	José	FAPESP	Journalist	Brazil	
21	Vicentin	Marcelo Cianti	Astronomy/ USP	Ph.D. candidate	Brazil	
22	Araya	Pablo Andres	Astronomy/ USP	Ph.D. candidate	Brazil	
23	Monteiro	Rogério	Astronomy/ USP	Ph.D. candidate	Brazil	
24	Ferreira	Elisa	Max-Planck-Institute for Astrophysics	Post-doctoral researcher	Germany	

- 1) Please write a country of affiliated institution.
- 2) Please put "*" in this section when FAPESP/JSPS pays his/her expenses.

8. Please describe the achievements of the workshop.

The Brazilian coordinator, Prof. Abramo, gave a plenary talk on the interplay between galaxy evolution and dark sector while the Japanese coordinator, Prof. Yamaguchi, gave a plenary talk on the motivation of dynamical dark energy. The Brazilian mentors, Profs. Abdalla and Wuensche, gave plenary talks on the observational project of 21cm line called BINGO while the Japanese mentor, Prof. Takahashi, gave a plenary talk on theoretical predictions on 21cm line. The Brazilian mentor, Prof. Overzier, gave a plenary talk on supermassive black holes while the Japanese mentor, Prof. Suyama, gave plenary talk on primordial black holes as a candidate of dark matter. The Japanese mentor, Prof. Ouchi, gave a plenary talk as well as a colloquium talk of Astronomy department on cosmic reionization, galaxy formation, and high redshift galaxies, emphasizing the collaborative study of 21-cm observations and galaxy observations with Subaru Prime Focus Spectrograph (PFS).

The general participants gave talks in three categories, that is, dark energy, dark matter, and first objects. Theoretical candidates for dark energy and dark matter were proposed as well as the discussions on how to test such proposals observational were made. On the other hand, in order to elucidate the baryonic sector, the formation of the first objects was discussed particularly paying attention to the re-ionisation process, during which the baryonic contents transitioned from completely neutral to completely ionized through ionizing photons produced by the first stars, galaxies and black holes.

We have also addressed the international collaboration on observational projects such as 21cm line and galaxy survey. The BINGO project, in which Brazilian researchers play a leading role, and the SKA project, where Japanese researchers are engaged in its development, are planned to detect 21cm. We have discussed how to combine the results of these projects and how to encourage young researchers to involve these projects. The similar discussions have also been made on the galaxy survey projects. The J-PAS project on Brazilian side and the Subaru Hyper Suprime-Cam Survey on Japanese side are ongoing. We also nurse the collaborative studies with Subaru PFS being developed under the Japan-Brazil collaboration. Theoretical new ideas on the identifications on dark energy and dark matter as well as on the formation of first objects have been exchanged among young researchers of both countries. They have also exchanged the cultural background as well as new ideas on physics through daily lunch, dinner, and excursion.

平成30年度若手研究者ワークショップ 参加者リスト

平成 31年 2月 18日

ワークショップ名:暗黒物質、暗黒エネルギー、そして銀河形成の謎への挑戦

1. 日本側参加者リスト ※行が足りない場合は、適宜追加してください。

No	姓	名	所属機関・部局	職名	所属国名 ¹⁾	備考 ²⁾
No	Family Name	Name	Affiliation	Job Title	Country ¹⁾	Note ²⁾
1	山口	昌英	東京工業大学・理学院	教授	日本	*
1	Yamaguch	Masahide	Tokyo Institute of Technology, School of	Professor	Japan	
2	大内	正己	東京大学・宇宙線研究所	准教授	日本	*
2	Ouchi	Masami	University of Tokyo, ICRR	Associate Pro	Japan	
3	高橋	智	佐賀大学・理工学部	准教授	日本	*
3	Takahashi	Tomo	Saga University, Faculty of Science and Enginerring	Associate Pro	Japan	
4	須山	輝明	東京工業大学・理学院	准教授	日本	*
4	Suyama	Teruaki	Tokyo Institute of Technology, School of	Associate Pro	Japan	
5	北嶋	直弥	名古屋大学・大学院理学研究科	特別研究員(F	日本	*
5	Kitajima	Naoya	Nagoya University, Graduate School of	Post-doctoral	Japan	
6	小幡	一平	東京大学・宇宙線研究所	博士研究員	日本	*
6	Obata	Ippei	University of Tokyo, ICRR	Post-doctoral	Japan	
7	多田	祐一郎	名古屋大学・大学院理学研究科	特別研究員(F	日本	*
7	Tada	Yuichiro	Nagoya University, Graduate School of	Post-doctoral	Japan	
8	藤田	智弘	ジュネーブ大学・物理学科、京都大学・大学院理学	研究員	日本	*
8	Fujita	Tomohiro	University of Geneva, Department of Theoretical	Post-doctoral	Japan	
9	樫山	和己	東京大学・大学院理学系研究科附属ビックバン宇宙国際研究センター	助教	日本	*
9	Kashiyama	Kazumi	University of Tokyo, RESCEU	Assistant Prof	Japan	
10	Chibana	Fabio	東京工業大学・理学院	博士課程	日本	
10	Chibana	Fabio	Tokyo Institute of Technology, School of	Ph.D. student	Japan	
11	木村	蘭平	早稲田大学・高等研究所	講師	日本	*
11	Kimura	Rampe	Waseda Institute for Advanced Study (WIAS)	Associate Pro	Japan	
12	榊原	由貴	関西学院大学・大学院理工学研究科	博士研究員	日本	*
12	Sakakihara	Yuki	Kwansei Gakuin University, Graduate School of	Post-doctoral	Japan	
13	関口	豊和	東京大学・大学院理学系研究科附属ビックバン宇宙国際研究センター	助教	日本	*
13	Sekiguchi	Toyokazu	University of Tokyo, RESCEU	Assistant Prof	Japan	
14	山内	大介	神奈川大学・工学部	助教	日本	*
14	Yamauch	Daisuke	Kanagawa University, Faculty of Engineering	Assistant Prof	Japan	

15	馬渡	健	東京大学・宇宙線研究所	特任研究員	日本	*
15	Mawatari	Ken	University of Tokyo, ICRR	Post-doctoral	Japan	
16	利川	潤	東京大学・宇宙線研究所	特別研究員(F	日本	*
16	Toshikawa	Jun	University of Tokyo, ICRR	Post-doctoral	Japan	
17	津村	耕司	東北大学・学際科学フロンティア研究所	助教	日本	*
17	Tsumura	Kohji	Tohoku University, The Frontier Research Institute	Assistant Prof	Japan	
18	鄭	昇明	東北大学・理学系研究科	学術研究員	日本	*
18	Chon	Sunmyon	Tohoku University, Graduate School of	Post-doctoral	Japan	
19	平野	信吾	九州大学・理学研究院	特別研究員(F	日本	*
19	Hirano	Singo	Kyushu University, Faculty of Science	Post-doctoral	Japan	
20	矢島	秀伸	筑波大学・計算科学研究センター	准教授	日本	*
20	Yajima	Hidenobu	Tsukuba University, Center for Computational Sciences	Associate Pro	Japan	

1) 参加者が所属する機関の所在国を記入してください。

2) 本ワークショップ経費にて参加される方については、備考欄に「*」を記入してください。

List of Participants for JSPS-FAPESP Joint Research Workshop 2018

Date: February 18, 2019

Workshop Title: Cosmological challenges to dark matter, dark energy and galaxy formation

2. List of participants on the Brazilian side

No.	Family Name	Name	Affiliation	Job Title	Country ¹⁾	Note ²⁾
1	Abramo	Raul	Physics/USP	Professor	Brazil	
2	Abdalla	Elcio	Physics/USP	Professor	Brazil	
3	Overzier	Roderik	ON and Astronomy/USP	Associate Res	Brazil	
4	Wuensche	Alex	INPE	Full Scientist	Brazil	*
5	Iocco	Fabio	ICTP-SAIFR	Associate Res	Brazil	
6	Troja	Antonino	ICTP-SAIFR	Post-doctoral	Brazil	
7	Castaño	María Benito	ICTP-SAIFR	Ph.D.	Brazil	
8	Nastase	Horatiu	Physics/IFT-Unesp	Professor	Brazil	
9	Santos	Edivaldo Moura	Physics/USP	Professor	Brazil	
10	Albuquerque	Ivone	Physics/USP	Professor	Brazil	
11	Queiroz	Carolina	Physics/USP	Ph.D. candida	Brazil	
12	Fornazier	Karin	Physics/USP	Post-doctoral	Brazil	
13	Montero-Dorta	Antonio	Physics/USP	Post-doctoral	Brazil	
14	Aion	Viana	Physics/USP São Carlos	Post-doctoral	Brazil	*
15	Santos	Larissa	USTC & CAS, China	Post-doctoral	China	
16	Furlanetto	Cristina	Astronomy/UFRGS	Professor	Brazil	
17	Luis Dors Jr.	Oli	Astronomy/UNIVAP	Professor	Brazil	*
18	Gomes	Adalto Rodrigues	Physics/UFMA	Professor	Brazil	
19	Vitorelli	André Zamorano	Astronomy/USP	Ph.D. student	Brazil	
20	Tadeu Arantes	José	FAPESP	Journalist	Brazil	
21	Vicentin	Marcelo Cianti	Astronomy/USP	Ph.D. candida	Brazil	
22	Araya	Pablo Andres	Astronomy/USP	Ph.D. candida	Brazil	
23	Monteiro	Rogério	Astronomy/USP	Ph.D. candida	Brazil	
24	Ferreira	Elisa	Max-Planck-Institute for Astrophysics	Post-doctoral	Germany	

¹⁾ Please write a country of affiliated institution.

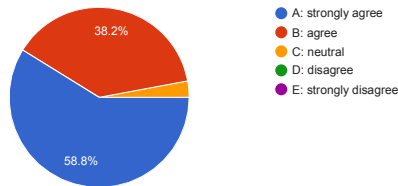
²⁾ Please put "*" in this section when FAPESP/JSPS pays his/her expenses.

Satisfaction questionnaire for the FAPESP-JSPS Workshop

34 responses

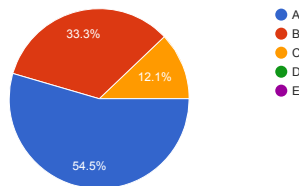
1.1 Organization of the workshop: the time allotted to each part of the program was appropriate?

34 responses



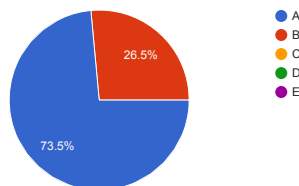
1.2 Organization of the workshop: the lecture and laboratory components were effectively linked

33 responses



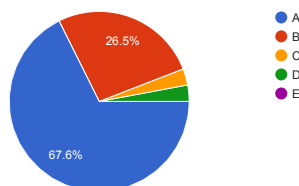
1.3 Organization of the workshop: the size of the classes was optimal

34 responses



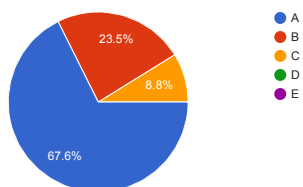
2.1 Lectures: sufficient time was allocated for the lectures

34 responses



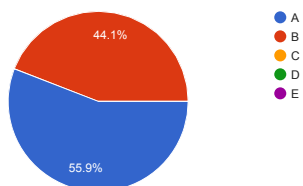
2.2 Lectures: the lectures were useful in my research (interesting, stimulating and practical)

34 responses



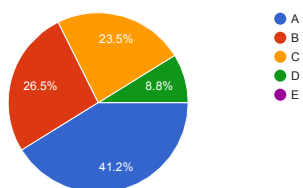
2.3 Lectures: the level of the lectures relative to my educational background and experience was optimal

34 responses



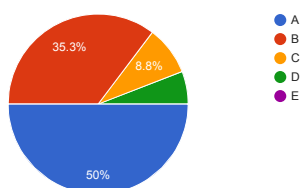
3.1 Discussions: sufficient time was allocated for the discussions

34 responses



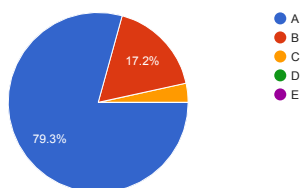
3.2 Discussions: the discussions were useful in my research (interesting, stimulating and practical)

34 responses

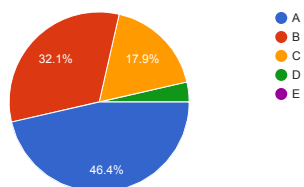


4.1 Excursion (if applicable): the excursion(s) was well organized

29 responses

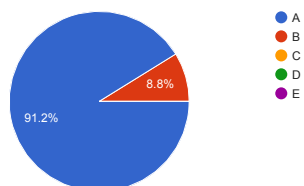


4.2 Excursion (if applicable): the excursion(s) was educating and helpful for my research



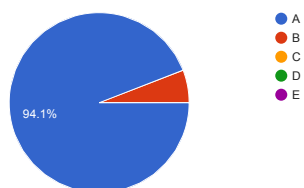
5.1 Lecturer: lecturers gave equal treatment to all the participants

34 responses



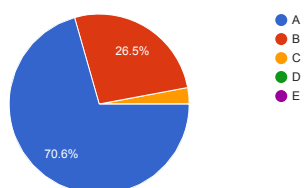
5.2 Lecturer: lecturers respected the ideas, opinions and comments of the participants

34 responses



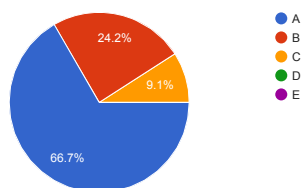
6.1 Overall: I found my participation in the workshop to be meaningful

34 responses



6.1 Overall: I was able to create and expand working networks with other researchers by participating in the workshop

33 responses



SECOND PART – please write your comments: what was the most successful part of this workshop?

Creating
links between the two communities

talks

I believe we
should try to build stronger collaborations

covering
various topics

The
initiative of creating a group list joining participants under a few common
topics addressed in the workshop.

Length
of talks was optimal

To
see people who are working on the similar subjects

This
workshop provided an excellent opportunity of exchanging knowledge between
several fields of research in cosmology, and also of narrowing the working
networks of researchers from different institutes- specially between Brazil and
Japan.

The
most successful part of this workshop is that I could get to know researchers in
Brazil and various observations that are currently planned.

Parallel
sessions

Very
nice parallel talks

Possibility
to interact with other researchers.

To
learn the dark energy studies

combination
of the three diverse research fields

Organization

Chance
to discuss with different research field persons

Interaction
with researchers in other fields and countries

Communication
with the researches in Brazil

having
a contact with researchers living in an opposite site in the earth

presentations,
especially by young scientists

I
could know the recent status of other fields and could have a lot of new
friends.

Scientific
program

The
informal discussions among the participants.

The
plenary sessions covering dark energy, dark matter and galaxies

scientific
session

The
opportunity of interacting with researchers with different
interests.

SECOND PART – please write your comments: what was the least successful part of this workshop (if possible, suggestion for improvement)

22 responses

Too
little time; needs improvement on the funding

Exchange
of information

There
should be a few (maybe 4 or 5) longer, more general lectures/reviews on a few
items.

-)
Plastic glasses were the only option of glasses in the coffee break. -) Coming
to USP is difficult (frequency of buses from Paulista to USP (and vice versa) is
very low!)

I
prefer that parallel session is placed in the first half of a
workshop.

Nothing to comment.

I would say that three days for the workshop is a bit short compared to the number of participants. My impression is that a few more days will greatly help the participants communicate with each other more intimately.

The shortness of the stay, due to jet lag, I felt difficulty to keep concentration onto lectures especially for the first couple of days.

Jet lag. Too meaty food.

Its short duration (only 3 days).

Few brazilian participants seem to be familiar with my research field.

limited time for discussion

The period of the workshop (I want 5 days)

too tight schedule...

duration of the workshop (at least 4 or 5 days will be needed)

Since this workshop had a tight time constraint, I think it was difficult to have more time for discussion this time. But it might be better to have more time for discussion.

The duration of the workshop is a bit short.

This workshop duration (3 days) is short for me to interact deeply with other researchers.

The schedule was tight and I think the time allocated for the discussions was insufficient.

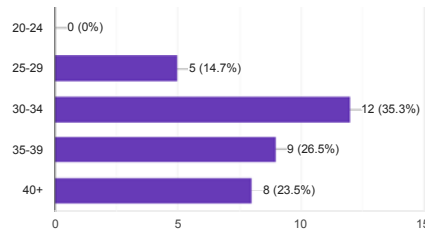
Although I learnt a lot from the other areas, perhaps the workshop could have been more focused on just one subject area (instead of three).

The duration of the workshop seems a little short.

The length was a bit too short. The duration could be 5-7 days.

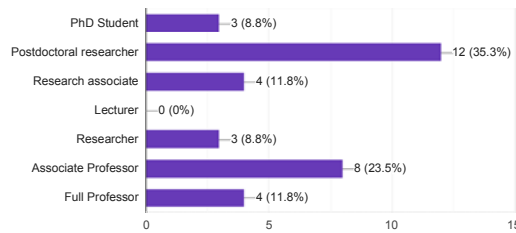
Please choose your personal information: age

34 responses



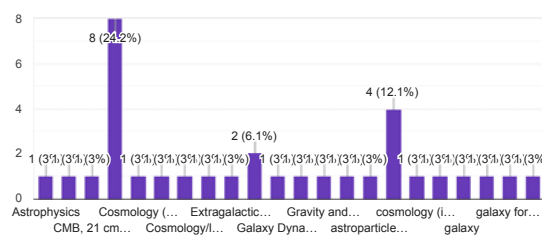
What is your title:

34 responses



What is your research field:

33 responses



This content is neither created nor endorsed by Google. [Report Abuse](#) - [Terms of Service](#)

Google Forms