

Project No. : 18002 Core Institution in Japan: The University of Tokyo

**JSPS Core-to-Core Program Integrated Action Initiative-
FY2006 Research Report**

Project No.	18002
Research Theme	International Research Network for Exotic Femto Systems
Duration of Project	2006/4/1-2008/3/31
Core Institution in Japan	The University of Tokyo

Implementing Organizations

Country	Japan
Core Institution	The University of Tokyo
Co-Chair (name and title)	Takaharu Otsuka, Professor
Number of Cooperating Institutions	3
Cooperating Institutions	RIKEN, Tokyo Institute of Technology, National Astronomical Observatory of Japan

Country	USA
Core Institution	Oak Ridge National Laboratory
Co-Chair (name and title)	Witold Nazarewicz, Scientific Director of HRIBF
Number of Cooperating Institutions	3
Cooperating Institutions	Michigan State University, Argonne National Laboratory, Yale University

Country	Germany
Core Institution	Gesellschaft fuer Schwerionenforschung
Co-Chair (name and title)	Karlheinz Langanke, Director of Theory Department
Number of Cooperating Institutions	3
Cooperating Institutions	Technische Universitaet Darmstadt, Universitaet zu Koeln, Technische Universitaet Muenchen

Country	France
Core Institution	Grand Accelérateur National d'Ions Lourds
Co-Chair (name and title)	Sydney Gale, Director
Number of Cooperating Institutions	3
Cooperating Institutions	IRES Strasbourg, CENBG Bordeaux, CEA Bruyeres-le-Chatel

Country	Finland
Core Institution	University of Jyvaskyla
Co-Chair (name and title)	Rauno Julin, Professor
Number of Cooperating Institutions	0
Cooperating Institutions	

Country	Italy
Core Institution	University of Padova
Co-Chair (name and title)	Cosimo Signorini, Professor
Number of Cooperating Institutions	2
Cooperating Institutions	INFN- Pisa INFN-Napoli

Result of Program Implementation

We have carried out three types of activities: arranging collaborations, holding seminars and sending researchers abroad. Regarding the collaborative works, many experimentalists and theoreticians have been sent abroad. For example, three experimentalists were sent to GSI, the major institute for this project in Germany, in order to participate in an experiment measuring the size of some exotic nuclei. For theory, collaborative works have been done in collaboration with American and German physicists, leading to publication of two papers on the evolution of nuclear shells in exotic nuclei. We organized three seminars. One was held in Japan jointly with German physicists under supports from DFG and GSI. It was in October, 2006 with about 20 German participants. The core-to-core project sent 13 Japanese to the joint workshop in US in March, 2007. This was held in Oak Ridge National Laboratory, a major institute in US for this project. With French, we organized a joint workshop in March, 2007 shortly after the one with US. The core-to-core project sent 12 Japanese.

As for the training of younger generations, three graduate students have been sent to Finland, France and US.

Achievements in FY2006 (Self Review)

The core-to-core project "Research Network on Exotic Femto Systems" went extremely well during its first year (2006-2007). The three seminars (joint workshops) attracted many participants, and their continuations and further developments have been agreed because of their significances. There were many young Japanese talkers in the German-Japanese workshop, which impressed Germans with expectations of future. Many collaborative works have emerged from these workshops. The next Japanese-German workshop will be held near Munich in September-October 2007. The next workshops in US will be organized in two locations, Oak Ridge National Laboratory and Michigan State University.

With French, a concrete project for developing detector systems is being carried out as a consequence. A specialized workshop is already planned. The collaborations produced many results, and some more are to come. The training of younger generations was successful. These students are actively developing their studies. For instance, the one sent to France has become almost an independent researcher, performing own original works based on what he has learned in France.

Future Plan (Measures toward Achieving Research Objectives)

We would like to extend the scope more towards the training of young generations. Having so much appreciations and expectations, foreign researchers and we decided to develop exchange programs more for students and post-docs. There are several summer schools in different countries including Japan.

We plan to send some Japanese lecturers and students to summer (and winter) schools abroad, and foreign countries will send lecturers and students to the Japanese summer school. A part of this plan may be realized already in the year 2007, but others will be done in near future. Another important plan is to integrate Japanese activities to those in other countries. As an example, this is being done with GANIL, a French institute, for detector developments.

French people have some experiences of making focal plane detectors, and their participation to the construction of a big detector for RIBF is ideal. Similar arrangements are being considered with other countries such as US, Germany and Finland. As for theory, we plan to participate the American project on nuclear theory, SciDAC. This has started already, but a more involved activity will start in August 2007.