FY2014

JSPS Core-to-Core Program
-Strategic Research Networks-
Research Report

Project No.	23002
Research Theme	Non-equilibrium dynamics of soft matter and information
Duration of Project	1 April, 2013～ 31 March, 2016
Core Institution in Japan	Graduate School of Science, Kyoto University

Implementing Organizations

Country	Japan
Core Institution	Graduate School of Science, Kyoto University
Co-Chair (name and title)	Shin-ichi Sasa, Professor
Number of Cooperating Institutions	11
Cooperating Institutions	Univ. of Tokyo, Kyoto Univ., Tohoku Univ., Ochanomizu Univ., Chiba Univ., Kyushu Univ., Tokyo Metropolitan Univ., Waseda Univ., Nagoya Univ., Osaka Univ., Tokyo Institute of Technology

Country	Germany
Core Institution	Heinrich-Heine University Dusseldorf
Co-Chair (name and title)	Hartmut Loewen,Professor
Number of Cooperating Institutions	13
Cooperating Institutions	Max-Planck Institute Mainz, Heidelberg University, University of Konstanz, Fritz Haber Institute, University of Stuttgart, Ludwig-Maximilians University of Munich, University of Magdeburg, University of Bayreuth, Physikalisch-Technische Bundesanstalt, Forschungszentrum Jülich, University of Göttingen, Institute of Materials Physics in Space, Technische Universität Berlin
Matching Fund	

Country	France
Core Institution	Atomic Energy Commision
Co-Chair (name and title)	Hugues Chate, Senior Scientist
Number of Cooperating Institutions	6
Cooperating Institutions	É cole Normale Sup é rieure, LPTMS, ESPCI, Institut Curie, Université Paris 6, Université Paris 7
Matching Fund	

Result of Program Implementation

In order to perform collaboration works, 20 researchers visited Germany and French. Two seminars were conducted as the result of discussions mainly among the coordinators. These aim at having a wider communication than the personal collaborations. Concretely, the seminar entitled with “Frontiers of Statistical Mechanics: from Non-equilibrium Fluctuation to Active Matter” was held from February 4 to February 17 at Kyoto, and the seminar with “Spin Glasses: An old tool for new problems” was held from August 25 to September 6 at Cargese, France. In researchers’ communication, young researchers such as graduate students stayed for a long term, where the purpose is the education of graduate students through the experience of collaboration works.

Achievements in FY2014 (Self Review)

Some achievements in the research are summarized as 50 papers (including unpublished 14 papers) on soft matter dynamics of liquid crystals and colloids, slow dynamics of glassy systems, active dynamics of self-propelling particles, and dynamics related to information processing. Fifty one presentations in international workshops and in domestic symposiums were done. Here, it is noted that many researchers have presentations without explicit mentioning their grants and that the total number of members’ presentations on the topics of this program is 142. Another important achievement than publications is the success in the informal communication among young researchers who participate in the two seminars. This will play an important role on the establishment of the research center.

Future Plan (Measures toward Achieving Research Objectives)

Collaborative works at various stages will be developed based on the achievements. Furthermore, in order to approach the intersection between soft matter and information, we will attempt to synthesize the four research fields, “soft-matter dynamics”, “slow dynamics”, “active dynamics”, and “information dynamics” in addition to deepening the understanding in each subject. Finally, when considering a research network in future, we should keep it in mind that various types of international research networks are running simultaneously. Same members appear repeatedly. Thus, it seems necessary to partly combine our project to some of them with supporting the main concept.