

Program for the Development
of Next-generation Leading Scientists
with Global Insight (L-INSIGHT)

Registration Required
Online Forum



REGISTRATION |

Due by
22 November, 2021

URL
<https://forms.gle/iauSWDHzz1Kji5UL9>



Spin-off programme from HeKKSaGOn, 2021

Tuesday 23 November, 2021
17:30-JST | 9:30-CET

An Initiative among
Heidelberg University,
Kyoto University, and
Karlsruhe Institute of Technology



Dr. HONGO Shun

*What research do we need
to do to reconcile
the conflicts between
biodiversity conservation
and food security
in developing countries?*



Dr. YAMAMOTO Akihisa

*Quantification, control, and modeling of mechanical
and dynamical alteration
of cell and tissue towards detection
and mechanistic understanding of disease*



Dr. TANAKA Tomohiro

*What engineering research is expected
from society in this
"full-of-informatics"
(e.g. AI, Drone, ICT) era?
Any research field in the similar
situations?*

for

Five Dialogues for Future Research and Science with Early Career Researchers

Dr. FUJII Toshihiro



*Clarifying the most
energetic particles
in the universe*

Dr. FUJII Yuri



*How and where did life emerge?
What did the first life look like?
Is it possible to have other form of life?*

This forum supports next generation of researchers in forming special international and inter-generational connections early in their careers in the hope of creating foundations for them to excel. This is a new initiative that has spined-off from the friendly relationship between German and Japanese universities fostered through the HeKKSaGOn (The German-Japanese University Alliance) framework, which is now in its eleventh year.

Researchers from Kyoto University, Heidelberg University, and Karlsruhe Institute of Technology will gather to discuss five topics proposed by several fellows from L-INSIGHT, a community of early career researchers at Kyoto University. The fellows believe that these trans-disciplinary topics including research environments and ways of thinking in other spheres of research are important in discussing the development of their future research.

We cordially invite you to the discussions regarding the topics of your choice. Please sign up now to find your new and future connections through this opportunity.

JST	CET	Kyoto University	Heidelberg University	Karlsruhe Institute of Technology
		Opening	MC <u>Bernd Kirchner</u> [Kyoto University European Center]	
17:30	09:30	Opening remarks	<u>Prof. Dr. TOKITOH Norihiro</u> [Executive Vice President] <u>Prof. YOKOYAMA Mika</u> [Deputy Executive Vice-President, Director of Kyoto University European Center]	<u>Prof. Dr. Matthias Weidemüller</u> [Vice-Rector for Innovation and Transfer]
		Parallel dialogues		
17:40	09:40	Dialogue — 1 Quantification, control, and modeling of mechanical and dynamical alteration of cell and tissue towards detection and mechanistic understanding of disease	<u>Dr. YAMAMOTO Akihisa</u> [Center for Integrative Medicine and Physics (CiMPhy), Institute for Advanced Study] Soft Matter Physics, Physics of Life	<u>Dr. Falko Ziebert</u> [Institute for Theoretical Physics] Research Group Physics of Complex Biosystems
		Dialogue — 2 What research do we need to do to reconcile the conflicts between biodiversity conservation and food security in developing countries?	<u>Dr. HONGO Shun</u> [The Center for African Area Studies] Conservation Science, Wildlife Management, Primate Ecology	<u>Dr. Katharina Brotzmann</u> [Research group "Aquatic Ecology and Toxicology," EU-Project Horizon 2020 "EU-ToxRisk," Project "PharmaSea," Centre for Organismal Studies (COS)] <u>Dr. Hjalmar Kühl</u> [Max Planck Institute for Evolutionary Anthropology Department of Primatology] <u>Dr. Jochen Ait Müller</u> [Department: Institute of Biological Boundary Surfaces]
		Dialogue — 3 What engineering research is expected from society in this "full-of-informatics" (e.g. AI, Drone, ICT) era? Any research field in the similar situations?	<u>Dr. TANAKA Tomohiro</u> [Graduate School of Global Environmental Studies] Civil Engineering/Hydrology	<u>Dr. Carolin Klonner</u> [Institute of Geography] Geoinformatics Research Group <u>Dr. Tim Kerlin</u> [Institute for Water and River Basin Management] <u>Dr. Ralf Loritz</u> [Department: Institute for Water and River Basin Management] <u>Dr. Andreas Schäfer</u> [Geophysical Institute] <u>Dr. Hoang Thai Duong Vu</u> [Institute for Water and Watercourse Development]
		Dialogue — 4 Clarifying the most energetic particles in the universe	<u>Dr. FUJII Toshihiro</u> [The Hakubi Center for Advanced Research/ Graduate School of Science] Astrophysics / Astroparticle Physics	<u>Dr. Iryna Lypova</u> [Center for Astronomy] Gamma Astronomy <u>Dr. Markus Roth</u> [Group leader — Pierre Auger Observatory Institute for Astroparticle Physics (IAP)]
		Dialogue — 5 How and where did life emerge? What did the first life look like? Is it possible to have other form of life?	<u>Dr. FUJII Yuri</u> [The Graduate School of Human and Environmental Studies] Planetary Science, Astrophysics, Astronomy	<u>Dr. Georg Lars Hildenbrand</u> [Kirchhoff Institute for Physics (KIP)] Experimental Biophysics
		General discussion		
18:55	10:55	Wrap-ups from each group (5min. × 5groups)		
19:25	11:25	Comments from Guests	<u>Prof. Dr. KONO Yasuyuki</u> [Vice President, Director International Strategy Office]	<u>Prof. Dr. TANAKA Motomu</u> [Institute for Physical Chemistry] Physical Chemistry of Biosystems <u>Prof. Dr. Stefan Norra</u> [Institute of Applied Geosciences]
19:40	11:40	Closing	<u>Prof. Dr. YOSHIKAWA Minako Jen</u> [Director, The Strategic Development Hub for Early Career Researchers, Center for Enhancing Next-Generation Research]	

Quantification, control, and modeling of mechanical and dynamical alteration of cell and tissue towards detection and mechanistic understanding of disease

Dr. YAMAMOTO Akihisa

The genetic and molecular properties of cells have been intensively studied, and changes in molecular signatures are utilized for detection of disease and deterioration of living organisms. On the other hand, the effect of such alterations on mechanical and dynamic properties of cells and tissues is still not well understood. In order to understand how the progression of diseases is associated with the change in physical properties of cells and tissues, orchestration of clear and minimally invasive observation of structure, fine control of external stimuli and environment, and theoretical modeling of mechanics and dynamics is essential. It is also critical to comprehensively understand how these changes arise from the alteration of molecular mechanisms and metabolism. Unraveling mechanical and dynamic properties of cells and tissues can be also a novel tool for disease detection, which is complementary to conventional approaches.

What research do we need to do to reconcile the conflicts between biodiversity conservation and food security in developing countries?

Dr. HONGO Shun

My research perspective is local: I aim to develop a wildlife management system in rural areas of African rainforests to mitigate conflicts between local people and conservation officials. However, even if rural people can manage wildmeat production by themselves, urban needs of wildmeat may remain high, and the population in developing countries continues to grow. How can we resolve the conflicts at different scales between food security and biodiversity conservation? I would like to hear the views of researchers in different disciplines with a national, regional or international perspective on this issue. My interest is mainly in meat-eating, but the scope of discussion could be extended to cereal production.

What engineering research is expected from society in this "full-of-informatics" (e.g. AI, Drone, ICT) era? Any research field in the similar situations?

Dr. TANAKA Tomohiro

In many engineering fields such as civil engineering or mechanical engineering, the fundamental advancements in fluid dynamics, structural dynamics, aerodynamics, mechanical dynamics have been seen at present. Hence, many early-career researchers in such research fields feel that the remaining issues are marginal deepening of the existing research directions would not yield drastic achievements done in the former era not only in academia but also in society. Applied science and technology such as AI or Drone are interesting topics, but not basic engineering research in a sense that people without any background in fluid dynamics can apply AI to predict river discharge, rainfall, wave, surge, landslide and so on. However, with the increasing capacity of informatics technology like AI, the mechanism-oriented theory/technology might be replaced with AI according to society's needs. I would like to make discussion on possible ways for mechanism-oriented research in forthcoming AI (black-box learning) era in broader research fields.

Clarifying the most energetic particles in the universe

Dr. FUJII Toshihiro

The origin and nature of the most energetic particles in the universe, called ultra-high-energy cosmic rays (UHECRs), remain an open question in astroparticle physics. Motivated by the need for an unprecedented sensitivity for further advancements, we propose the Fluorescence detector Array of Single-pixel Telescopes (FAST) as a next-generation ground-based UHECR observatory that aims to cover a huge area by deploying a large array of low-cost fluorescence detectors. We will install a micro array of the FAST prototype at the Pierre Auger Observatory in Mendoza, Argentina, commencing a remote stand-alone observation of UHECRs.

How and where did life emerge? What did the first life look like? Is it possible to have other form of life?

Dr. FUJII Yuri

We know only one kind of life, which is life on the Earth. We have large variety of organisms on the Earth, but they are all based on RNA/DNA. They all need organic compounds. I am not an expert on the origin of life, but am very interested in this topic. I would like to take this opportunity to have interdisciplinary discussion on the possibility of other form of life, such as non-carbon based one, on the requirement for the emergence of life, on the formation and delivery of building blocks of life and its environment, on the origin of life on the Earth, and so on. I believe this kind of discussion is useful for searching for extraterrestrial life and/or studying the environment that is suitable for life.

Organizers Heidelberg University, Karlsruhe Institute of Technology, and Kyoto University
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