

Title Unraveling Magnetism and Topology

Speaker Prof. Yoshinori Tokura

Director, RIKEN Center for Emergent Matter Science (CEMS)
Professor, Department of Applied Physics, University of Tokyo



Date & Time Thursday, May 25, 2017 4:00 p.m.
Place I²CNER Hall, Ito campus, Kyushu University

Abstract

Topology of spin textures in real-space and momentum-space of a solid are a source of emergent electromagnetic properties and functions. Topological spin textures are formed in noncentrosymmetric, e.g. polar or chiral, lattices with spin-orbit coupling or in geometrically frustrated lattices, giving birth to nontrivial magnetism and electron dynamics, such as colossal magnetoresistance, multiferroicity, skyrmions, topological insulator/semimetal, etc. In particular, non-collinear and/or non-coplanar spin textures may generate the fictitious magnetic and electric fields acting on the electrons, thus hosting the enhanced magneto-electric effect and topological Hall effects. Emergent electromagnetism in topological magnets and its possible application are overviewed.

About the Speaker

Degrees:

1976 B.S., Dept. of Applied Physics, University of Tokyo
1981 Ph.D., Dept. of Applied Physics, University of Tokyo

Professional experiences:

2017 - Present Distinguished Professor, University of Tokyo
2013 - Present Director, RIKEN Center for Emergent Matter Science
2007 - 2013 Group Director, Cross-Correlated Materials Research Group, RIKEN
2006 - 2012 Research Director, Multiferroics Project (MF),
Exploratory Research for Advanced Technology Organization (ERATO), JST
2001 - 2007 Research Director, Spin Superstructure Project (SSS),
Exploratory Research for Advanced Technology Organization (ERATO), JST
1995 - Present Professor, Dept. of Applied Physics, University of Tokyo
1994 - 1995 Professor, Dept. of Physics, University of Tokyo
1986 - 1993 Associate Professor, Dept. of Physics, University of Tokyo

Awards:

2014 Honda Memorial Award
2013 The Imperial Prize and Japan Academy Prize
2012 IUPAP Magnetism Award and Néel Medal
2011 Fujihara Prize
1990 IBM Japan Science Prize

Host: Professor Atsushi Takahara

Co-hosted: Institute for Materials Chemistry and Engineering, Kyushu University

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<http://i2cner.kyushu-u.ac.jp/>

Contact: Research Support and International Affairs division
International Institute for Carbon-Neutral Energy Research
Tel:092-802-6934 Email:wpikenkyu@jimu.kyushu-u.ac.jp

