

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
1981

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

Professional experiences:

2017 - Present
2013 - Present
2007 - 2013
2006 - 2012

2001 - 2007

Distinguished Professor, University of Tokyo
 Director, RIKEN Center for Emergent Matter Science
 Group Director, Cross-Correlated Materials Research Group, RIKEN
 Research Director, Multiferroics Project (MF),
 Exploratory Research for Advanced Technology Organization (ERATO), JST
 Research Director, Spin Superstructure Project (SSS),
 Exploratory Research for Advanced Technology Organization (ERATO), JST

1995 - Present
1994 - 1995
1986 - 1993

Professor, Dept. of Applied Physics, University of Tokyo
 Professor, Dept. of Physics, University of Tokyo
 Associate Professor, Dept. of Physics, University of Tokyo

Awards:

2014
2013
2012
2011
1990

Honda Memorial Award
 The Imperial Prize and Japan Academy Prize
 IUPAP Magnetism Award and Néel Medal
 Fujihara Prize
 IBM Japan Science Prize

Host: Professor Atsushi Takahara

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

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