Perspectives and Challenges in Nanomagnetism and Spintronics

(7th Dec – 13th Dec 2015)

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Overview

Magnetism is one of the oldest scientific disciplines but is also at the forefront because of the emerging nanotechnology era. Nanomagnetism deals with phenomena specific to submicron sized particles. The scientific quests in nanomagnetism can be framed quite clearly as (i) synthesize, (ii) explore and (iii) develop materials with tailored magnetic properties. Nanotechnology has surely given us the tools to synthesize magnetic nanoparticles with tailor-made applications. Researchers all round the globe are working on understanding the spin dynamics and spin transport in dilute magnetic semiconductors for realization of spintronics device prototypes. Such devices have the power to revolutionize the entire gamut of electronic and communication industry at present.

The course will be covering all such topics in nanomagnetism and spintronics by acclaimed professors working in this field for decades.

Modules	Introduction to Nanomagnetism, Origin of nanomagnetic behavior, Sample dimensions andcharacteristic length scales, Broken translation symmetry, Dimensionality and density of states, Dimensionality and coordination number, Magnetism of surface atoms, Magnetization reversal, Stoner-Wohlfarth model, Dimensionality and critical behavior, Temperature effects, Superparamagnetism, Collective phenomena and superspin glass behavior, Magnetic ordering in low dimensions, Magnetic anisotropy in low dimensions, Domains and domain wall movements, Add-ons: Introduction to GMR, Spintronics: Basics and its technological ramifications.
Target Audience	Students of all levels (B.Tech/M.Tech/M.Sc/Ph.D) / Faculty members / Researchers from universities and technical institutions.
Fees	Participants from Abroad ------ $300 Students (pursuing Ph. D) ------ Rs 1000 Students (pursuing Masters / Bachelors courses) ------ Rs 1000 Faculty members / Researchers ------ Rs 3000 The above fee includes a working lunch, all instructional materials and computer use for tutorials. The participants will be provided with suitable accommodation on payment basis.

International Resource Person

Per Nordblad, born 1949, is Professor in Solid State Physics at Department of Engineering Sciences, Uppsala University, Sweden. He has authored/co-authored more than 300 articles in international physics journals in the fields of magnetism and superconductivity.

Per Nordblad has been acting as Divisional Associate Editor for Physical Review Letters (2006-2011) and was selected outstanding referee by APS in 2013. He is a member of APS and the Swedish Physical Society. He has been organizer, committee member, and invited speaker/participant at numerous international conferences, workshops and schools, and served as evaluator and member of evaluation committees for many different Research Councils and Agencies.

He was conferred the prestigious John Wheatley award in 2015 by the American Physical Society for his outstanding contributions in nurturing physics research and education in several Third World countries, including Bangladesh, Vietnam, Thailand and Eritrea, leading to the establishment of several prominent groups pursuing internationally competitive physics today.

Venue: Dept of Physics NIT Patna

Registration Process:

1. By Internet Banking:
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Allahabad Bank, NIT Patna
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2. Draft in favour of
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Course Co-ordinator

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