ICTS Skype Seminar

Title : Study of Glassy State and Unconventional Magnetic Orderings

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Date : Wednesday, January 9, 2019

Time : 10:00 AM

Venue : Amal Raychaudhuri Meeting Room, ICTS Campus, Bangalore

Abstract : In recent years, various forms of non-collinear and non-coplanar magnetic orderings have been reported in transition metal oxides. Interestingly, the origin of various application-oriented phenomena, such as multiferroicity, magnetocaloric effect, and anomalous Hall effect is found to be related to such unusual magnetic order [1, 2]. In this presentation, we explore the possibility of unconventional magnetic order in models of magnetism, namely, the Heisenberg model, the Kondo-lattice model and the Hubbard model. In addition, we also study the possibility of spin-charge ordered phases in the extended Hubbard Hamiltonian [3]. Further, exotic magnetic orderings in Kiteav materials in which bond-directional Ising-like magnetic exchange interactions are dominant will be discussed. The potential candidates for such systems include iridates of type A2IrO3 with A=Na, Li, α-RuCl3 and Ba3IrTi2O9 [4]. Finally, we explore the role of magnetic/non-magnetic impurities in clean Kiteav materials which is expected to lead to glassy state [5, 6].

References:

[1] T. Kimura et.al., Nature, 426(6962):55–58, 2003.
[2] Y. Taguchi et. al, Science, 291(5513):2573–2576, 2001.
[3] K. Pasrija and S. Kumar, Phys. Rev. B, 93, 195110, 2016.
[4] Simon Trebst, arXiv:1701.07056, 2017.
[5] S. Manni, Y. Tokiwa, and P. Gegenwart, Phys. Rev. B, 89:241102, Jun 2014.
[6] Hechang Lei et al., Phys. Rev. B, 89: 020409, Jan 2014.