

Materials Science and Technology Division

Materials Theory Seminar

“ Heisenberg antiferromagnet on a triangular lattice: the wanted, the true, and the different”

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Wednesday, April 11, 2007
11:00 a.m.

Bldg. 3025M, Third Floor Conference Room

Abstract:

I will provide an overview of some theoretical ideas that historically surrounded the triangular-lattice antiferromagnets (TLAFs). I will argue that the truly distinct and unusual feature of the TLAF is in its excitation spectrum. While the ground state of the Heisenberg antiferromagnet on a triangular lattice is magnetically ordered, large part of its spectrum has an intrinsic lifetime due to spontaneous decays. I will demonstrate that this property stems naturally from the non-collinearity of the ground-state spin configuration that, in turn, is related to geometric frustration. We conclude that magnon decays must be prominent in a wide class of noncollinear antiferromagnets. A nontrivial type of singularities associated with the topological transitions of the decay surfaces will be discussed.

Host: Roger Melko