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Seminaires du LPTM , Universite de Cergy Pontoise

Jeudi 22 Juin 2017, 14 :00
LPTM, 4.13 St Martin II
Domaines : cond-mat

Titre : *Emergent Ising orders of frustrated magnets.*

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Résumé : *Much of the research in frustrated quantum magnets has focused on the elusive quest for magnetically disordered phases with highly entangled ground states - quantum spin liquids. Somewhat intermediate between these rare states and commonplace magnets are* nematic *phases which appear as a result of a two-magnon condensation and are characterized by the presence of a gap for excitations with spin one. As a result, nematic states exhibit no dipolar magnetic order.*

In my talk I describe two simple models supporting spin nematic phases. The first of them is provided by the two-magnon instability of the 1/3 magnetization plateau state of the quantum triangular antiferromagnet. I show that the two-magnon instability, which takes place near the end-point of the magnetization plateau, leads to a novel two-dimensional vector chiral phase with alternating spin currents. This interesting state spontaneously breaks inversion symmetry and can be thought of as appearing due to a fluctuation-generated Dzyaloshinskii-Moriya interaction. The second example involves an easy-axis spin-1 antiferromagnet in which transition into nematic state occurs via condensation of spin excitons.