

Open Talk

18th August, 2017 | Boson Hall

Speaker

Dr. Joseph A M Paddison
Academic & Research Staff of Quantum Matter Group,
University of Cambridge, UK

TITLE OF THE OPEN TALK

"Quantum spin-liquid candidates in triangular and kagome magnets"

ABSTRACT

Quantum spin liquids are highly-entangled states in which conventional magnetic order can be suppressed to the lowest measurable temperatures. In my talk, I will discuss how these states can be realised in quasi-two-dimensional materials with frustrated lattice geometries. I will present results from neutron-scattering experiments and numerical modeling on the new materials $\text{Ln}_3\text{Mg}_2\text{Sb}_3\text{O}_{14}$ ($\text{Ln}=\text{Dy},\text{Ho}$) and YbMgGaO_4 . In $\text{Dy}_3\text{Mg}_2\text{Sb}_3\text{O}_{14}$, Ising-like Dy(3+) occupy a kagome lattice of corner-sharing triangles, and form a state in which the magnetic moment fragments into periodic and aperiodic components. In $\text{Ho}_3\text{Mg}_2\text{Sb}_3\text{O}_{14}$, this state can be tuned by the introduction of quantum fluctuations due to crystal-field effects. In YbMgGaO_4 , Yb(3+) spins occupy a triangular lattice, and I will explain how the combination of magnetic anisotropy, interactions beyond nearest-neighbour exchange, and structural disorder may help to stabilise a potential quantum-spin liquid state.

Venue

DATE	-	18th August, 2017
TIME	-	4:00 PM
VENUE	-	Boson Hall
HOST FACULTY	-	Dr. Manoranjan Kumar