

The triangular lattice antiferromagnet in a magnetic field

I will present the phase diagram of the triangular lattice Heisenberg antiferromagnet in a magnetic field. We consider both nearest- (J1) and next-nearest-neighbor (J2) interactions in the range $0 \leq J2/J1 \leq 1/2$ and compare the result of self-consistent non-linear spin-wave theory calculations to quantum ground states obtained using the Density Matrix Renormalization Group and variational Monte Carlo. We find two consecutive magnetization plateaus, a "up, up, down" plateau at small J2 and a "up, up, up, down" plateau at large J2, both of which overlap around the frustration point. We then characterize the fate of the putative U(1) Dirac quantum spin liquid around $J2/J1=1/8$ as a function of field.

J. Knolle , Technische Universität München, Germany