

# CMP Seminar

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## Two topological phenomena in Kitaev magnets

Kitaev magnets are a family of spin-orbit assisted Mott insulators of 4d and 5d electrons, where Kitaev-type anisotropic interactions between effective spin-1/2 moments play an important role. Most Kitaev materials exhibit magnetic orders at low temperature, such as the zigzag order in honeycomb Kitaev magnets. Recently experimental evidences of a quantum spin liquid (QSL) phase induced by applying an external magnetic field has been found in  $\alpha$ -RuCl<sub>3</sub>, drawing lots of attention to this Kitaev magnet. Motivated by these experimental progresses, I discuss two types of topological phenomena in Kitaev magnets: (i) topological magnon excitations hosted in the zigzag magnetically ordered phase, featuring robust surface magnons at finite frequency; (ii) a field-induced QSL ground state with spinon fermi surfaces in antiferromagnetic Kitaev magnets. I will also discuss the phase diagram of the antiferromagnetic Kitaev model as a function of perpendicular field and bond anisotropy.

Monday, October 7<sup>th</sup>, 2019 at 4:10 p.m.  
Room 1400 BPS Bldg.  
Host: Xianglin Ke