

Abstract

Quantum spin liquids (QSLs) are long-range entangled states of matter with emergent gauge fields and fractionalized excitations. In my talk I will focus on how to search for fractionalized excitations in Kitaev materials, which believe to harbor a variety of QSLs. These Kitaev QSLs exhibit two types of fractionalized quasiparticle excitations - itinerant Majorana fermions and gapped Z_2 fluxes. In recent years, a remarkable theoretical and experimental progress has been achieved in understanding that these fractionalized quasiparticles and, in particular, Majorana fermions can be effectively probed by conventional spectroscopic techniques such as inelastic neutron scattering, Raman scattering with visible light, and resonant inelastic X-ray scattering.