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Magnetic Neutron Scattering –From basic scattering theory to cutting edge applications

Tuesday, 20 June 2023 14:30 (30 minutes)

Since their inception, neutron scattering methods have significantly contributed to many advancements in solid state research. This is especially true for the study of magnetic materials, where neutrons provide a uniquely qualified probe to investigate magnetism on the microscopic scale. This talk aims to elucidate the relation between the magnetic properties of a sample and the observable neutron scattering cross sections. Contemporary examples, will be used to connect the basic theory with real world measurement data acquired at a variety of instruments like small angle scattering, single crystal and powder diffraction, three-axis spectroscopy as well as neutron imaging. Finally, a deeper dive into low-dimensional magnetism in metal-organic compounds will showcase the connection of solid state magnetism and sought-after phenomena such as quantum criticality and high temperature superconductivity. This will highlight the importance of magnetic neutron scattering in condensed matter physics and material science.

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