

Spin/Orbital Dynamics in Transition Metal Oxides

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We give an overview of the magnetic neutron scattering experiments on superconducting copper oxides, with emphasis on a "resonant mode" that dominates the spin excitation spectrum in the superconducting states of many of these materials. Recent results include observations of the primary resonant mode in a trilayer high-T_c material, and of a predicted secondary mode in bilayer materials. Microscopic theories of these collective modes as well as their significance for the mechanism of high temperature superconductivity will be discussed. If time permits, we will also discuss neutron scattering experiments on titanium and vanadium oxides where orbital degeneracy gives rise to unusual magnetic ground states and excitations.