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Magnetic Field Induced Metal-Insulator Transition in $Pr_{1-x}(La_{1-y}Sr_y)_xMnO_3$ (x=0.45, y=0.15)

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Recently, the electronic phase diagram of $Pr_{1-x}(La_{1-y}Sr_y)_xMnO_3$ (x=0.45, y=0.15) has been studied in the vicinity of the metal-insulator transition boundary. By controlling the e_g electron bandwidth W, the ground state can be tuned to change from a charged-ordered (CO) and orbitally-ordered (OO) state (y<=0.2) to a ferromagnetic metallic state (y>0.25). This system has been reported to exhibit bicritical features near y =0.25.
Elastic and inelastic neutron scattering has been used to study the magnetic correlations and spin dynamics of the sample near the insulator-metal boundary. The insulating CO/OO ground state of $y=0.15$ can be melted by the application of external field. The evolution of the CO/OO when a magnetic field is applied will be discussed in the context of the competing interactions that may be responsible for the CMR effect.

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