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**Antiferromagnetic fluctuations and polaron correlation in colossal magnetoresistive layered manganites** T. PERRING, D. ADROJA, J. CHAMPION, Rutherford Appleton Laboratory, Oxfordshire, UK, G. AEPPLI, London Centre for Nanotechnology, UCL, London, UK, T. KIMURA, Los Alamos National Laboratory, NM, Y. TOKURA, University of Tokyo, Japan — We report results of a study of the antiferromagnetic (AF) fluctuations and polaron correlations in the bilayer manganite  $\text{La}_{22x}\text{Sr}_{1+2x}\text{Mn}_2\text{O}_7$ ,  $x=0.30$  and  $x=0.35$ . The AF fluctuations, seen earlier in zero field for  $x=0.40$  [1], similarly appear on warming through the magnetic ordering temperatures (90K, 121K respectively), coexist with ferromagnetic critical scattering, and persist to at least 300K. The intensity tracks that of the resistivity both as a function of magnetic field and temperature. Polaron correlations were seen at wavevectors  $(\pm\delta, 0, \pm 1)$ , similar to those reported for  $x=0.40$  [2], with magnetic field and temperature dependency of the intensity that also tracks the resistivity. The results indicate that the AF and polaron correlations are closely related. [1] T.G.Perring et al, Phys Rev Lett. **78** 3197 (1997) [2] L.Vasiliu-Doloc et al, Phys Rev Lett **83** 4393 (1999)

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