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Paramagnetic Spin Fluctuations in Optimally Doped CMR Manganites $\text{La}_{0.7}\text{A}_{0.3}\text{MnO}_3$ ($A = \text{Ca, Sr, Ba}$) JOEL HELTON, JEFFREY LYNN, YIMING QIU, YANG ZHAO, NIST Center for Neutron Research, DMITRY SHULYATEV, YAKOV MUKOVSKII, National University of Science and Technology “MISiS”, Moscow, GEORGII BYCHKOV, SERGEI BARILO, Institute of Solid State and Semiconductor Physics, Minsk — Hole doped perovskites of the form $\text{La}_{0.7}\text{A}_{0.3}\text{MnO}_3$ (where $A = \text{Ca, Sr, or Ba}$) display colossal magnetoresistance at a combined ferromagnetic and metal-insulator transition. The spin fluctuation spectrum of these materials develops a quasielastic spin diffusive central component that dominates the spectrum near T_C . We report inelastic neutron scattering measurements that reveal an additional and unexpected component to the spin fluctuation spectrum, in the form of anisotropic ridges of surprisingly strong quasielastic scattering running along $(H\ 0\ 0)$ and equivalent directions. Temperature and field dependent measurements show that this scattering is most pronounced at temperatures in the paramagnetic phase and is suppressed by applied magnetic fields exceeding 10 Tesla.

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