Anisotropic Hyperfine Field Fluctuation in $La_{0.67}Ca_{0.33}Mn_{0.99}Fe_{0.01}O_3$

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Abstract **– Colossal magnetoresistance(CMR), Mössbauer spectra, and neutron diffraction of the iron-doped manganite, $La_{0.67}Ca_{0.33}Mn_{0.99}{}^{57}Fe_{0.01}O_3$, have been studied. The crystal structure is found to be cubic perovskite with the lattice parameter a_0 = 3.868 Å. It is notable that the Curie temperature, T_C= 270 K, line broadening and 1,6 and 3,4 line-width difference appear to suggest anisotropic hyperfine field fluctuation. The temperature dependence of the effective anisotropy energy is also found to decrease rapidly with increasing temperature.**

Index Terms **– CMR, Mössbauer spectra, Neutron diffraction, Anisotropic hyperfine field fluctuation**