Frequency dependent magneto-dielectric effect in bilayer manganite \( \text{Pr(Sr}_{0.1}\text{Ca}_{0.9})_2\text{Mn}_2\text{O}_7 \)\(^1 \) BARNALI GHOSH-SAHA, S.N. Bose National Centre for Basic Sciences, D. BHATTACHARYYA, Central Glass and Ceramic Institute, S. PATNAIK, Jawaharlal Nehru University, A.K. RAYCHAUDHURI, S. ARUMUGAM — We report novel frequency dependent magneto-dielectric effect and a strong dielectric anomaly near Neel temperature (\( T_N \)) in a single crystal of bilayer manganite \( \text{Pr(Sr}_{0.1}\text{Ca}_{0.9})_2\text{Mn}_2\text{O}_7 \) system. The magneto-dielectric effect measured in a field of 3T shows large frequency dependence and reaches a maximum (~25%) near \( T_N \) at a measurement frequency of 1 kHz. Change in frequency leads to a change in the sign of the effect. There is a sizeable dielectric relaxation process near \( T_N \), which exhibits an activated behavior and strongly non-Debye nature at or below \( T_N \) while becoming Debye like at higher temperature.

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