DYNAMIC RESPONSE OF MAGNETIC IONS IN THE COLOSSAL MAGNETOREZISTANCE MANGANITES $\mathbf{La_{1-X}Ca_XMnO_3}$

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We present a detailed study of nonlinear dynamic susceptibility of the polycrystalline perovsckite manganites $La_{1-X}Ca_XMnO_3$ ($0.30 \leq x \leq 0.66$), below and above transition temperature as function of frequency and temperature. Near by $x = 0.5$ the system changes from ferromagnetic and conducting to antiferromagnetic and insulating with large hysteretic behavior in $M(T)$ and $\rho(T)$. The Curie temperatures determined from dynamic susceptibility analysis were compared to the data obtained previously by electrical and static magnetic measurements, and a new phase diagram was drawn. A sharp negative peak in $\chi'_3(T)$ curves was found for the samples with $x = 0.3$ - 0.51. The data suggest the presence of correlated magnetic clusters near by the magnetic transition.

9.7 cm

13.4 cm

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