MAGNETIC TRANSITION IN $La_{1/3}Nd_{1/3}Ca_{1/3}MnO_3$ PEROVSKITE INDUCED BY ELECTRIC FIELD AT A CONSTANT MAGNETIC FIELD

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9.7 cm

We report a discovery of a new effect in $La_{1/3}Nd_{1/3}Ca_{1/3}MnO_3$ – the jump of magnetization induced by external electric field E (2.5 – 4) V/cm at a given magnetic field H (18 – 25) kOe at $T = 4.2$ K. This effect is large when compared with a metamagnetic transition induced by the magnetic field in many substances. The origin of the magnetization jump induced by the external electric field has not yet been explained. We assume that this transition is induced by the hopping of E-excited e_g electrons and that this is a source of a jumpwise increase in magnetization in the noncollinear magnetic phase within the perovskite. This effect can be attributed to a strong coupling between carriers induced by the electric field (the conduction electrons e_g), and the local magnetic moments (t_{2g} – localized spins) through a mechanism the Zener double exchange.

13.4 cm

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