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Magnetic, Transport, and Optical Properties of LaGa1-xMnxO3 Alloys NATALIA NOGINOVA, FENG CHEN, GEOFFREY CHELULE, VLADIMIR GAVRILENKO, Center for Materials Research, Norfolk State University, PEROVSKITES COLLABORATION — Manganese doped perovskites are materials promising for data storage, demonstrating optically and field induced memory effects. Optical absorption, electric conductivity, and magnetic resonance of $LaGa_{1-x}Mn_xO_3$crystals with Mn-content $x = 0$ to 1.0 have been measured at different temperatures. Non-linearity and hysteresis were observed in voltage-current dependencies for all Mn-concentrations studied. Electron energy structure and optical functions of $LaGa_{1-x}Mn_xO_3$are calculated by generalized gradient approximation method within density functional theory using *ab initio* pseudopotentials. Analysis of predicted total (TDOS) and projected densities of states (PDOS) data for higher x-values clearly indicate the dominance of $3d$ antibonding Mn states in the region around Fermi level. Observed significant modifications of optical absorption spectra and transport properties are related to the enhancement of $3d$(Mn)-$2p$(O) interactions with increase of x.

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