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High Pressure Effects on Structural and Transport of self-doped
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tional Synchrotron Light Source, Brookhaven National Laboratory, USA, 11973, NA-
TIONAL SYNCHROTRON LIGHT SOURCE, BROOKHAVEN NATIONAL LAB-
ORATORY, USA, 11973 COLLABORATION — The effects of hydrostatic pressure
up to 6 GPa and 11 GPa, respectively on the electrical resistivity and structural prop-
erties are systematically investigated on the self-doped Maganite La$_{0.9}$MnO$_3$. We
find a maximum shift of the peak resistivity with pressure occurs at $\sim$ 3.4 GPa in the
La deficient system similar to the chemically doped manganite systems previously
studied by our group. The unusual pressure dependence of resistivity can be re-
lated with the competition between ferromagnetic Double Exchange interaction and
antiferromagnetic superexchange mechanism. The x-ray diffraction reveals a single-
phase crystallographic phase of monoclinic space group up to 11 GPa. Electronic
structure simulations of the pressure dependence on the stability of the magnetic
phases are being conducted. This work was supported by NSF DMR-0512196.

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