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Persistence of Jahn-Teller Distortion up to the Insulator to Metal Transition in $LaMnO_3$ MARIA BALDINI, HpSynC, Carnegie Institution of Washington, Argonne, IIlinois USA, VIKTOR STRUZHKIN, ALEX GONCHAROV, Geophysical lab. Carnegie Institution of Washington, Washington D.C. USA, PAOLO POSTORINO, Dipartimento di Fisica, Università "Sapienza," Roma Italy, WENDY MAO, Geological and Environmental Science, Stanford University, California USA — High pressure, low temperature Raman measurements performed on $LaMnO_3$ up to 34 GPa provide the first evidence for the persistence of the Jahn-Teller distortion over the entire stability range of the insulating phase. This result resolves the ongoing debate about the nature of the pressure driveninsulator to metal transition (IMT), demonstrating that $LaMnO_3$ is not a classical Mott insulator. The formation of domains of distorted and regular octahedra, observed from 3 to 34 GPa, suggests that $LaMnO_3$ becomes metallic when the fraction of undistorted octahedra domains increases beyond a critical threshold. In this scenario, it is interesting to consider whether or not the CMR effect may be induced in $LaMnO_3$ by applying pressure. Preliminary results obtained performing high pressure resistivity measurements in a magnetic field will be reported.

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