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Percolative Metal-Insulator transition in the doped Hubbard-Holstein model with the Gutzwiller Approach JAMSHID MORADI KURDESTANY, SASHI SATPATHY, Department of Physics and Astronomy, University of Missouri, Columbia, MO 65211-7010, USA. — Motivated by the recent progress in understanding of Mott insulators away from half filling, observed in many perovskite oxides, we study the metal-insulator transition in the Hubbard-Holstein model, which contains both the Coulomb and the electron-lattice (Jahn Teller) interactions by using the Gutzwiller variational method. We find that strong electron-lattice Interaction leads to phase separation, which however can be frustrated due to the long-range Coulomb interaction, resulting in a mixed phase consisting of puddles of metallic phases embedded in an insulating matrix. When the dopant concentration exceeds a threshold value x_c , the metallic part forms a percolating network leading to metallic conduction. Depending on the strength of the electron-lattice interaction, x_c can be of the order of 0.05 - 0.20 or so, which is the typical value observed in the perovskites.

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