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Phase diagram of alkali-doped fullerides: A rotationally-invariant slave-boson perspective[1] ALDO ISIDORI, MASSIMO CAPONE, International School for Advanced Studies (SISSA), Via Bonomea 265, 34136 Trieste, Italy — We study the phase diagram of alkali-doped fullerides (A_3C_{60} with $A = K, Rb, Cs$) as a function of the local Coulomb interaction U and the phonon-mediated Jahn-Teller coupling J for various levels of electron filling. In these materials, the Jahn-Teller coupling between electrons and the vibrational modes of the C_{60} molecules effectively reverses the sign of the Hund's coupling, providing a source for a local s-wave pairing mechanism. Using the rotationally-invariant slave-boson formalism we investigate the phase transitions between metallic (superconducting) states and different types of Mott insulating states at either large U or large J, revealing a correlation-induced enhancement of superconductivity in proximity of the Mott localization mechanism.

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