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Mott transition in multi-orbital Hubbard models for iron pnictides: a slave-rotor mean-field study RONG YU, QIMIAO SI, Department of Physics and Astronomy, Rice University, Houston, TX 77005 — One key question is whether the iron pnictides contain sufficiently strong electron correlations. Towards this end, it would be important to establish how Mott transition may in principle happen in models appropriate for the iron pnictides, i.e., models with even number of electrons partially occupying multiple orbitals. Here we study multi-orbital Hubbard models using a slave-rotor mean-field theory. We show that a Mott insulating phase does exist. We determine the critical values of the Coulomb interactions for several choices of band parametrization. We also discuss the role of Hund's rule coupling in the Mott transition.

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