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Exploring superconductivity in multi-orbital systems ZI YANG MENG, HAE-YOUNG KEE, YONG BAEK KIM, Department of Physics, University of Toronto — We study possible unconventional superconducting states in correlated electronic systems with multi-orbital and strong spin-orbit coupling. In particular we focus the interplay between electronic correlation, spin-orbital coupling and lattice structure in determining a pairing symmetry. To study such systems in a controlled manner, we develop a dynamical mean field theory simulation with hybridization expansion continuous time quantum Monte Carlo impurity solver. We further explore the Parquet formalism in which the momentum dependence of the pairing vertex is explicitly introduced by combining both particle-particle and particle-hole channel contributions, to capture the pairing symmetry. The effects of hole and electron doping will be also discussed.

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