Superconductivity in strongly repulsive fermions: the role of kinetic-energy frustration

LEONID ISAEV, GERARDO ORTIZ, Indiana University Bloomington, CRISTIAN BATISTA, T-4, LANL — We discuss a physical mechanism of a non-BCS nature which can stabilize a superconducting state in a strongly repulsive electronic system. By considering the 2D Hubbard model with spatially modulated electron hoppings, we demonstrate how kinetic-energy frustration can lead to robust d-wave superconductivity at arbitrarily large on-site repulsion. This phenomenon should be observable in experiments using fermionic atoms, e.g. $^{40}\text{K}$, in specially prepared optical lattices.

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