

Superconductivity and bond order in a doped Mott insulator

Jörg Schmalian

I will present results for superconductivity, inhomogeneous bond order and strange metal behavior in a doped valence bond crystal. $\text{SrCu}_2(\text{BO}_3)_2$ is a frustrated system that is close to a Mott insulating state. Cu-spins are arranged on a Shastry-Sutherland lattice and form a valence bond crystal at half filling. Upon carrier doping we predict a strong electron-hole asymmetry. A metallic valence bond crystal forms for electron-doping while a d-wave superconductor occurs for hole-doping. Most remarkably, superconductivity is boosted by the spontaneous emergence of an inhomogeneous state with plaquette bond order.