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Correlations, Topology and Superconductivity in Twisted bilayer graphene

The recent discovery of superconductivity and Mott insulators in twisted bilayer graphene and related materials points to the importance of correlation effects in this new solid state physics platform. An interesting and potentially crucial ingredient is band topology inherited from the Dirac fermion dispersion of graphene. We will discuss our theoretical efforts to model these systems and study the resulting ground states with interactions. We find that key aspects of the physics differ from previously studied correlated superconductors.