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Search for Stable States in Two-Body Excitations of the Hubbard Model on the Honeycomb Lattice

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We present one- and two-body measurements for the Hubbard model on the honeycomb (graphene) lattice from ab-initio HMC. Excitons, or particle/hole excitations in low-dimensional systems are analogous to the pion in QCD, but without confinement whether they are bound is a dynamical question. By measuring one- and two-body correlators across various spin- isospin channels we can compute energy shifts, and check for stable states.

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