Variational Monte Carlo Study of Heisenberg Model in Honeycomb Lattice with Six Spin Interactions NILADRI SENGUPTA, Louisiana State University, SANDEEP PATHAK, UC Santa Cruz, KA-MING TAM, JUANA MORENO, MARK JARRELL, Louisiana State University — We investigate the possible nature of the spin liquid phase proposed by Quantum Monte Carlo simulation on the Hubbard model in a Honeycomb lattice. We consider the effective spin half Heisenberg model including the nearest neighbors, next nearest neighbors and six sites exchange interactions. Variational Monte Carlo simulations are performed by using the Gutzwiller projected BCS or resonating valence bond wavefunction. Different kind of symmetries (s,p+ip,d,d+id) in the pairing function are considered in order to investigate the effects of higher order exchange interactions.

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