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**Approximating strongly correlated spin and fermion wavefunctions with correlator product states**[1] HITESH CHANGLANI, Department of Physics, Department of Chemistry and Chemical Biology, Cornell University, JESSE KINDER, Department of Chemistry and Chemical Biology, Cornell University, CYRUS UMRIGAR, Department of Physics, Cornell University, GARNET CHAN, Department of Chemistry and Chemical Biology, Cornell University — We describe correlator product states, a class of numerically efficient many-body wave functions to describe strongly correlated wave functions in any dimension. Correlator product states introduce direct correlations between physical degrees of freedom in a simple way, yet provide the flexibility to describe a wide variety of systems. Variational Monte Carlo calculations for the Heisenberg and spinless fermion Hubbard models demonstrate the promise of correlator product states for describing both two-dimensional and fermion correlations. In one dimension, correlator product states appear competitive with matrix product states for the same number of variational parameters.

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