Lattice model for strongly interacting fermions in an optical lattice JASON KESTNER, LUMING DUAN, University of Michigan — We have numerically treated two distinct fermions across a Feshbach resonance in a few-well trap using a stochastic variational approach with a correlated gaussian wavefunction. We are able to obtain an effective lattice model which reproduces the relevant low-energy physics in the simple cases for which we have performed numerical calculations. However, we argue that this lattice model is, in fact, more generally applicable, and captures the essential physics of a strongly interacting two-component ultracold fermionic gas in an optical lattice with average filling factor less than two.

Jason Kestner
University of Michigan