Dynamics and Spectral Structure of Strongly Interacting Bosons in a Double Well

We investigate the spectral and dynamical properties of interacting bosons in a double well. A combination of exact diagonalization with a multi-configurational time-dependent Hartree approach allows us to analyse the time evolution of two- and three- particle states for variable initial conditions, and furthermore subject to (a-)diabatic switching of the tunnelling barrier. We discuss first results for the particles initially prepared at the ground state or at the saddle-point energy, and contrast single- vs. many-particle aspects of the dynamics.