Chaotic escape dynamics of ultracold and Bose-condensed atoms

KEVIN MITCHELL, University of California, Merced, DANIEL A. STECK, Oregon
Center for Optics and Department of Physics
— We consider the nonlinear dynamics of small packets of ultra-cold and Bose-condensed atoms in a two-dimensional, double-well optical trap, composed of two overlapping Gaussian beams. We are interested in the transport of such packets from one side of the well to the other, and potential escape from the trap. We theoretically investigate how the time-dependent escape rate of atoms from the trap is influenced by the chaotic dynamics of the potential and by the inherent nonlinearity induced by atom-atom interactions.

Kevin Mitchell
University of California, Merced