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Macroscopic Quantum Tunneling and Entangled States in Bose-Einstein Condensates[1] LINCOLN D. CARR, DIMITRI R. DOUNAS-FRAZER, ANN M. HERMUNDSTAD, Physics Department, Colorado School of Mines — We use a multi-band Hubbard model to study beyond-mean-field effects in macroscopic quantum tunneling of excited states in Bose-Einstein condensates. Our goal is to determine straightforward observables such as the oscillation frequency of kink-like structures between two wells or the propagation speed of such structures on a lattice. As a preliminary step, we present some surprising new results for entangled states of N bosons in two wells.

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