

Colloquium Notice

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Avalanches of Bose-Einstein Condensates in Leaking Optical Lattices

We study the decay of an atomic BEC population $N(\tau)$ from the leaking boundaries of an Optical Lattice (OL). For a rescaled interatomic interaction strength $\lambda > \lambda_b$, self-trapped Discrete Breathers (DB's) are created, preventing the atoms from reaching the leaking boundaries. Collisions of other lattice excitations with the outermost DB's, result in avalanches (jumps) in $N(\tau)$ which for $\lambda_b < \lambda < \lambda_*$ follow a scale free distribution $P(j = \delta N) \cong 1/j^\alpha$. A theoretical analysis of the mixed phase-space of the system, indicate that $1 < \alpha < 3$ in agreement with our numerical findings. We point out that although our focus is given to atomic BECs, our results are also relevant in a large variety of contexts, most prominently being the light emittance from coupled non-linear optics waveguides

Monday

November 10, 2008

Starts at 12:15 PM

Coffee at 12:00 PM

Physics Conference Room, SB B326