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**Dynamic Localization of Interacting Particles in an Anharmonic Potential** MARK HERRERA, THOMAS ANTONSEN, EDWARD OTT, University of Maryland, SHMUEL FISHMAN, Technion-Israel Institute of Technology — We investigate the effect of anharmonicity and interactions on the dynamics of an initially Gaussian wavepacket in a weakly anharmonic potential. We note that depending on the strength and sign of interactions and anharmonicity, the quantum state can be either localized or delocalized in the potential. We formulate a classical model of this phenomenon and compare it to quantum simulations done for a self consistent potential given by the Gross-Pitaevskii Equation.

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