

Abstract Submitted
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Nonlinear hydrodynamics in single-component and binary Bose-Einstein condensates¹ PETER ENGELS, CHRIS HAMNER, JIAJIA CHANG, Washington State University — We investigate the rich dynamics of quantum hydrodynamics in Bose-Einstein condensates. In single component systems even apparently simple operations such as merging two condensates can lead to complex effects like the formation of dispersive shock waves and trains of dark solitons. In binary Bose-Einstein condensates, i.e. condensates comprised of two distinguishable types of atoms, the counterflow of two superfluids is an additional degree of freedom that leads to even richer dynamics, including intercomponent shocks, modulational instability, dark-bright solitons and novel dark-dark solitons. In this talk an introduction to quantum hydrodynamics and an overview of our recent and ongoing experiments will be given.

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