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Quantum shock and soliton dynamics in the splitting and merging of BECs[1] JIAJIA CHANG, PETER ENGELS, Washington State University — We experimentally study the quantum shock dynamics resulting from the splitting and merging of two Bose-Einstein condensates in an elongated Ioffe-Pritchard type trap. Our experiments are carried out in the high-density, non-adiabatic regime and we find the dynamics to be dependent on atom number and dipole potential strengths. For example, a uniform soliton train is observed within a merged condensate for low atom numbers whereas the formation of a pronounced density bulge and a non-uniform soliton train are observed for higher atom numbers. We will describe recent and ongoing experimental results.

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