

Abstract Submitted
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Determining s -wave Scattering Length Ratios from Binary Condensate Dynamics¹ K. M. MERTES, J. W. MERRILL, D. S. HALL, Amherst College, R. CARRETERO-GONZALEZ, San Diego State University, P. G. KEVREKIDIS, University of Massachusetts, Amherst, D. J. FRANTZESKAKIS, H. E. NISTAZAKIS, University of Athens — We characterize experimentally and computationally the component separation dynamics of a binary Bose-Einstein condensate (BEC) created suddenly by a two-photon transition from a single BEC. In addition to inelastic losses, the condensate dynamics depend crucially on the three s -wave scattering lengths (inter- and intraspecies), which are nearly identical in ^{87}Rb . The experimentally observed density distributions exhibit striking transient ring patterns that closely correspond to the results of numerical simulations. The simulations exhibit a sensitive dependence on the ratios of the scattering lengths; we can therefore extract these ratios by comparing simulation to experiment.

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