

Abstract Submitted
for the DAMOP13 Meeting of
The American Physical Society

What happens to a BEC at unitarity? PHILIP MAKOTYN, CATHERINE KLAUSS, ERIC CORNELL, DEBORAH JIN, JILA, NIST and the University of Colorado — Understanding many-body quantum systems with interactions, especially strong interactions, represents an important challenge in physics. While Bose-Einstein condensates (BEC) in ultracold atomic gases provide an accessible system with controllable interactions, historically, strongly interacting BECs have been difficult to study because these systems are inherently unstable due to three-body inelastic collisions. We report on work probing strongly interacting ^{85}Rb BEC at unitarity using a Feshbach resonance to quickly change the interaction strength. We observe dynamics of the gas before the cloud has lost many atoms or significantly changed its density.

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Date submitted: 24 Jan 2013

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