Abstract Submitted
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New Features in Component Separation with Rotating and Non-rotating Binary Bose-Einstein Condensates[1] KEVIN MERTES, TARUN MENON, DAVID HALL, Amherst College — We explore experimentally the dynamics of component separation in two-component Bose-Einstein condensates prepared coherently in the $|F = 2, m_F = 1\rangle$ and $|F = 1, m_F = -1\rangle$ spin states of ^{87}Rb. The double condensate is created out of a single condensate by driving a two-photon hyperfine transition with radiofrequency fields. The condensates are confined with nearly identical trapping potentials, and subsequent evolution of the two components is driven by differences in their scattering lengths. Images taken along two orthogonal axes after the condensates are released reveal an oscillating sequence of alternating and overlapping component distributions involving coaxial cylindrical shells. Similar experiments with rotating condensates exhibit qualitatively different separation dynamics.

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