

Abstract Submitted
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Single-Mode Approximation and Dynamical Localization in a Ferromagnetic Spin-1 Condensate¹ Q. QIN, E.M. BOOKJANS, P.F. GRIF-FIN, M.-S. CHANG, M.S. CHAPMAN, Georgia Institute of Technology — Bose condensates with internal degrees of freedom offer rich quantum dynamics due to the nonlinear spin-spin interactions and the vector properties of the condensate order parameter. Recent experiments on spin-1 condensates have revealed that the internal spin-changing collisions lead to coherent spin mixing [1]. When the size of the condensate is smaller than the spin healing length, all three Zeeman components will have the same spatial wavefunction, a condition referred to as the single-mode approximation (SMA). In this case, the coherent spin mixing in a spin-1 condensate represents a nonlinear Josephson oscillator, similar to two weakly-linked superconductors. This is an ideal system for observing Shapiro levels or the dynamical localization of the spinor system. We will report the most recent progress of our experiment.

[1] M.-S. Chang, et al., Nat. Phys., **1**, 111 (2001)

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