

Abstract Submitted
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Spin synchronization in a finite temperature $F=1$ Bose-Einstein condensate DONALD FAHEY, Joint Quantum Institute, National Institute of Standards and Technology and the University of Maryland, ARNE SCHWETTMANN, University of Oklahoma, GIL SUMMY, Oklahoma State University, JAMIE LUSKIN, PAUL LETT, Joint Quantum Institute, National Institute of Standards and Technology and the University of Maryland — The out-of-equilibrium spinor evolution of an ultracold spin-1 thermal Bose gas is characterized by population oscillations driven via coherent spin-mixing collisions. Despite its multi-spatial-mode nature, the thermal gas dynamics match those of a single-spatial-mode spinor BEC in the mean-field regime with a modified oscillation period resulting from lower density. But in a BEC at finite temperature, condensed and thermal components coexist and are coupled through collisions. We report on the synchronization of spin oscillations between these components in a harmonic trapping potential and discuss approaches to modelling this system.

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