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Modeling Quantum Spin Dynamics in an Ultracold Gas

B.J. LAND, C.D. HAMLEY, C.S. GERVING, T.M. HOANG, M.L.B. ANQUEZ, M.S. CHAPMAN, Georgia Institute of Technology — A recent experiment in our lab focuses on investigating spin dynamics in the quantum regime, where mean field approaches fail. Previous theoretical models for the quantum dynamical evolution of a spin-1 Bose-Einstein condensate do not include the effects of atomic loss that is unavoidable in experiment. Here, we present results of different loss models including a fully quantum calculation of this complicated many body system using a Monte-Carlo approach. We compare the results of these methods to recent experimental measurements and obtain good agreement.

[X] Prefer Oral Session
[ ] Prefer Poster Session

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