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Synthetic clock states generated in a Bose-Einstein condensate via continuous dynamical decoupling NATHAN LUNDBLAD, Bates College, DIMITRIOS TRYPOGEORGOS, ANA VALDES-CURIEL, ERIN MARSHALL, University of Maryland, College Park, IAN SPIELMAN, University of Maryland, College Park & NIST — Radiofrequency- or microwave-dressed states have been used in NV center and ion-trap experiments to extend coherence times, shielding qubits from magnetic field noise through a process known as continuous dynamical decoupling (1). Such field-insensitive dressed states, as applied in the context of ultracold neutral atoms, have applications related to the creation of novel phases of spin-orbit-coupled quantum matter (2). We present observations of such a protected dressed-state system in a Bose-Einstein condensate, including measurements of the dependence of the protection on rf coupling strength, and estimates of residual field sensitivities.
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(2) Campbell, D. L. & Spielman, I. B. Rashba realization: Raman with RF. New J. Phys. 18, 033035 (2016).

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