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Stable longitudinal spin domains in a nondegenerate ultracold gas
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We demonstrate that linear effective magnetic fields can stabilize longitudinal spin domains in a weakly-interacting gas of ^{87}Rb atoms above quantum degeneracy. Coherent spin-rotating interactions are modified by applying a small linear effective magnetic field that varies the local Larmor precession. Adding small linear effective magnetic fields with gradients that oppose the initial spin gradient in the domain wall stabilizes the spin domains. We experimentally determine these stabilizing gradients over a range of cloud temperatures and densities, and compare to a quantum Boltzmann theory in the hydrodynamic regime.

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