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Domain-wall dynamics in stable spin domains in a non-degenerate gas J.M. MCGUIRK, S.D. GRAHAM, D. NIROOMAND, Simon Fraser University, R.J. RAGAN, University of Wisconsin - La Crosse — We demonstrate the existence of stable spin domains in a weakly interacting gas of ^{87}Rb atoms above quantum degeneracy. Coherent exchange interactions, when combined with optically-generated inhomogeneous effective magnetic fields, produce long-lived steady-state domains. By studying the relaxation of the domain wall, we identify the external field gradients that stabilize the initial spin domain structures. We compare our results with hydrodynamic and collisionless solutions to a kinetic equation and show good quantitative agreement across a wide range of densities and temperatures.

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