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**Domain wall dynamics of a non-degenerate gas** ROBERT RAGAN, University of Wisconsin-La Crosse, SD GRAHAM, D NIROOMAND, JM MCGUIRK, Simon Fraser University — In recent experiments, we have observed the dynamics of spin domains in a trapped gas of weakly interacting Rb-87 atoms above quantum degeneracy over a wide range of densities and effective magnetic field gradients. We have analyzed the long-lived domain wall structures as well as the transient dynamics using a kinetic equation in which quantum exchange is described in terms of identical spin rotation. For high densities, a stable hydrodynamic domain wall solution is in good quantitative agreement with experiment and computer simulations. For low densities, where the mean-free path is comparable to the length of the cloud, a moments approach gives results that agree with the lifetime and size of the observed transients.

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