Dynamics of out-of-equilibrium domain walls in an ultra-cold Bose gas

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A gas of $^{87}$Rb atoms does not support spin domains above its critical temperature for degeneracy. However, quantum symmetries during atom-atom collisions can preserve localized spin domains over longer periods of time than would be expected classically, allowing for studies of spin domains in a thermal gas. Here, we create spin domains in a nondegenerate gas using optical patterning techniques. We report progress towards observing the precession of these domains, leading to rapid spin inversions, as well as towards understanding the route to equilibrium.