



Canadian Association
of Physicists

Association canadienne
des physiciens et physiciennes

Contribution ID: 2656 Type: **Oral Competition (Graduate Student) / Compétition orale (Étudiant(e) du 2e ou 3e cycle)**

Stable longitudinal spin domains in a nondegenerate ultracold gas

Wednesday 5 June 2019 12:00 (15 minutes)

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.

Author: GRAHAM, Sean (Simon Fraser University)

Co-authors: NIROOMAND, Dorna (Simon Fraser University); RAGAN, Robert J. (University of Wisconsin - La Crosse); MCGUIRK, Jeffrey (Simon Fraser University)

Presenter: GRAHAM, Sean (Simon Fraser University)

Session Classification: W1-1 Degenerate Quantum Gases and Cold Atoms and Molecules (DAMOPC/DCMMP)
| Gaz quantiques dégénérés, molécules et atomes froids (DPAMCP/DPMCM)

Track Classification: Division of Atomic, Molecular and Optical Physics, Canada / Division de la physique atomique, moléculaire et photonique, Canada (DAMOPC-DPAMPC)