

Abstract Submitted
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Progress towards a rapidly rotating ultracold Fermi gas¹ MING-GUANG HU, MICHAEL VAN DE GRAAFF, ERIC CORNELL, DEBORAH JIN, JILA, CU-Boulder and NIST — We are designing an experiment with the goal of creating a rapidly rotating ultracold Fermi gas, which is promising system in which to study quantum Hall physics. We propose to use selective evaporation of a gas that has been initialized with a modest rotation rate to increase the angular momentum per particle in order to reach rapid rotation. We have performed simulations of this evaporation process for a model optical trap potential. Achieving rapid rotation will require a very smooth, very harmonic, and dynamically variable optical trap. We plan to use a setup consisting of two acousto-optical modulators to “paint” an optical dipole trapping potential that can be made smooth, radially symmetric, and harmonic.

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