

Abstract Submitted
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Waveguide BEC Interferometry with Painted Potentials¹ MALCOLM BOSHIER, VYACHESLAV LEBEDEV, CARLO SAMSON, CHANGHYUN RYU, Physics Division, Los Alamos National Laboratory — Waveguide atom interferometers² offer the possibility of long measurement times in a compact geometry, which can be an advantage over free space interferometers if the dephasing due to interatomic interactions can be controlled. We are investigating waveguide BEC interferometers created with the painted potential,³ a technique which allows for the creation and manipulation of BECs in arbitrary 2D potentials. The goal is to measure a linear acceleration of the device. The painted potential allows new approaches to the initial splitting of the BEC. For example, instead of smoothly deforming a single well potential into a double well, it is possible instead to gradually remove a weak link⁴ coupling two initially separated waveguides. This strategy should reduce excitations created in the splitting process. We are currently implementing such schemes and measuring the coherence time of the BEC after division. We will present the results of these measurements, and report progress towards measuring linear accelerations.

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