

Abstract Submitted
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A large momentum beam-splitter using Bloch oscillations PIERRE CLADÉ, SAIDA GUELLATI-KHÉLIFA, FRANÇOIS NEZ, LUCILE JULIEN, FRANÇOIS BIRABEN, Laboratoire Kastler Brossel - CNRS — The sensitivity of an inertial sensor based on a Ramsey Bordé interferometer is proportional to the velocity separation of atoms in the two arms of the interferometer. In this contribution we will describe how Bloch oscillations can be used to increase this separation using a large momentum transfer (LMT) beamsplitter. We experimentally demonstrate a separation of 10 recoil velocities. A numerical model is developed to calculate the sensitivity of the interferometer to phase fluctuations and to intensity fluctuations. We demonstrate that the latter can be significantly decreased by using a suitable combination of LMT pulses. We finally show how one can further increase the separation.

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