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**Bose-Einstein condensate inside a Bragg-reflecting atom cavity**[1]
RUI ZHANG, University of Michigan, RACHEL SAPIRO, NATALYA MORROW, Medical College of Wisconsin, RAHUL MHASKAR, GEORG RAITHEL, University of Michigan — We experimentally realize an atom cavity consisting of an optical lattice and a magnetic trap. On one side, atoms trapped in the cavity are confined by the magnetic potential, while on the other the atoms are Bragg-reflected by the optical lattice. We demonstrate this atom cavity by recording the momentum-space oscillation of a Bose-Einstein condensate (BEC) inside the cavity. The BEC is first created in the magnetic trap and then adiabatically loaded into the optical lattice. After a sudden displacement from the trap center, the BEC experiences a near-constant force and starts to accelerate. The following motion of the BEC is similar to a Bloch oscillation. The oscillation periods are measured and compared with theoretical predications. We further propose a Mach-Zehnder-type atom interferometer based on this atom-cavity configuration.

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