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Transport dynamics of a ⁸⁷**Rb BEC in an artificial magnetic field** L.J. LEBLANC, K. JIMENEZ GARCIA, R.A. WILLIAMS, M.C. BEELER, J.V. PORTO, I.B. SPIELMAN, Joint Quantum Institute, NIST, and University of Maryland — Despite the electrical neutrality of ultracold quantum gases, the combination of far-detuned Raman lasers and spatially-dependent Zeeman energies can be used to effect a Lorentz force for ultracold atoms [1]. The transport dynamics of a Bose-Einstein condensate (BEC) in an artificial magnetic field are similar to those in a solid, displaying, for example, the Hall effect. Using external forces to drive a mass current, we study transport in a ⁸⁷Rb BEC as a function of the applied artificial magnetic field and explore the resulting Hall coefficients.

[1] Y.-J. Lin *et al.* Nature **462**, 628 (2009).

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