

## Superfluid Flow and Dissipation in a Bose-Fermi Gas Mixture

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We study the dynamics of counterflowing dilute bosonic and fermionic lithium gases [1]. First, by tuning the interaction strength we measure the critical velocity  $v_c$  of the system in the BEC-BCS crossover in the low temperature regime. Near resonance the critical velocity is found close to the sound velocity of the Fermi gas and we compare our measurements to the recent prediction of Castin et al., *Comptes Rendus Physique* 16, 241 (2015). Second, raising the temperature of the mixture slightly above the superfluid transitions reveals an unexpected phase-locking of the oscillations of the clouds induced by dissipation, a phenomenon akin to the quantum Zeno effect.

[1] M. Delehaye, S. Laurent, I. Ferrier-Barbut, S. Jin, F. Chevy, and C. Salomon, Critical Velocity and Dissipation of an ultracold Bose-Fermi Counterflow, *Phys. Rev. Lett.*, to appear in December 2015, ArXiv 1510.06709