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Detecting Entrainment in Fermi-Bose mixtures.[1] KHALID HOSSAIN, Washington State Univ, SUBHADEEP GUPTA, University of Washington, MICHAEL FORBES, Washington State University, University of Washington — The defining property of superfluids is that they flow without resistance. Entrainment – where one superfluid drags along another as it flows – may thus seem counter-intuitive, yet it is perfectly consistent with the Galilean covariance and absence of dissipation in superfluid mixtures, and may play a critical role in neutron stars where proton and neutron entrainment may underlie the puzzeling occurance of pulsar glitches. Although predicted by Andreev and Bashkin in 1975 for superfluid ^{3}He and ^{4}He mixtures, entrainment remains to be detected experimentally in cold atomic gases since it is a small effect, appearing at second order in the inter-particle interaction. In this talk I shall present an experimental proposal for detecting entrainment in ^{6}Li-^{174}Yb Fermi-Bose mixture, taking advantage of the large mass ratio and carefully suppressing mean-field effects.

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