

Abstract Submitted
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Casimir-like drag force in a slow-moving superfluid DAVID ROBERTS, YVES POMEAU, Ecole Normale Supérieure — It is widely accepted that a superfluid flow exhibits a critical velocity below which there is no dissipation. However, the often-neglected zero-temperature quantum fluctuations have implications for the existence of this critical velocity. The drag force on an object created by the scattering of these quantum fluctuations in a three-dimensional, weakly interacting Bose-Einstein condensate is discussed. A non-zero force at low velocities is found to exist for two specific experimentally realizable examples, which suggests that the effective critical velocity in these systems is zero.

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