

Abstract Submitted
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Quantitative Studies of Vortex Decay in Finite Temperature Atomic Condensates¹ ASHLEIGH JOY ALLEN, CARLO F. BARENGHI, NICK P. PROUKAKIS, School of Mathematics and Statistics, Newcastle University — An off-centered vortex in a pure harmonically-trapped atomic condensate precesses at constant radius, as recently confirmed experimentally (D.V. Freilich *et al.* Science 329, 1182 (2010).). The thermal cloud induces a frictional force on the vortex, thereby leading it to a gradual decay. Extending earlier work (B. Jackson *et al.* Phys. Rev. A 79, 053615 (2009).), we perform a detailed quantitative study of the role of the dynamics of the thermal cloud on the motion of one or more vortices; we model the system by a dissipative Gross-Pitaevskii equation for the condensate, self-consistently coupled to a quantum Boltzmann equation for the thermal modes (Zaremba-Nikuni-Griffin formalism).

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