Non-Hamiltonian Dynamics of Quantized Vortices[1] SCOTT STRONG, LINCOLN D. CARR, Colorado School of Mines — The dynamics of quantized vortices in Bose-Einstein condensates are often modeled by a nonlinear Schrödinger equation. In contrast, we show that quantized vortices in fact obey a non-Hamiltonian evolution equation, which enhances dispersion and introduces a gain mechanism. These modifications allow the vortex medium to support helical excitations propagating ahead of a dissipative soliton capable of relaxing localized curvature events into packets of Kelvin waves. Such excitations, absent from previous local induction models, provide a pathway for decay in low-temperature quantum turbulence.

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