

Abstract Submitted
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Recovery Time of Matter Airy Beams¹ GLENN DUSING, TORREY SAXTON, ZACHARY TEMPLE, ALLISON HARRIS, Illinois State University — Airy beams have been studied in an optical context since their discovery in the late 1970s and have found numerous applications in technologies such as microscopy and optical trapping. Many of these applications are based on the wave packets' unique features such as zero or minimal diffraction, self-acceleration, and self-healing. Recently Airy beams have been produced using electrons and these matter waves exhibit many of the same unique characteristics of their optical counterparts. We use our Path Integral Quantum Trajectory (PIQTr) model to present a study of the recovery time of damaged matter Airy wave packets in free space and a nonlinear Kerr-type medium. We show that in free space the recovery time increases approximately linearly with mass and is independent of other kinematical parameters such as momentum, velocity, and spatial width. In the Kerr-type medium, recovery time is decreased compared to free space and does not scale linearly with mass.

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Allison Harris
Illinois State University

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