

Abstract Submitted
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Symmetry Imprints and Singularity Structure in Nonlinear Dynamics KELLEY COMMEFORD, Colorado School of Mines — We have analytically explored the effect of a discretely symmetric impulse on a vortex of definite winding number. The impulse imprints singularities on the vortex, which propagate outward in a peculiar pattern. An analytical description of this phenomenon was previously found for the constant potential. Here, we extend those results to the case of a harmonic potential using a Feynman propagator. We show that the vortex breaks into singularities, which then oscillate around the vertical axis. This analysis is valid for Bose-Einstein condensates in harmonic traps as well as pulses in GRIN mediums in fiber optics.

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