

Abstract Submitted
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Robust topological states in Parity-time (PT) symmetric photonic lattices¹ ANDREW HARTER, YOGESH JOGLEKAR, Indiana University Purdue University Indianapolis (IUPUI) — We consider generalized Aubry-Andre models, which support topological states and are experimentally realizable in integrated waveguide lattices, in the presence of balanced gain and loss. When the gain-loss strength exceeds a threshold set by the nearest neighbor tunneling, the non-Hermitian, PT-symmetric Hamiltonian of this system undergoes PT breaking transition. We investigate the interplay between the PT-breaking transition, tuned by the gain-loss strength, and topological transitions between different states with Chern numbers. We show, due to sub-lattice-localization property of the topological edge states in these models, these edge states remain robust across the PT-breaking transition. We present the consequences of this result for light-propagation in such materials, obtained via both tight-binding model and beam-propagation method.

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