

Abstract Submitted
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Flat Band Emerging from the Exceptional Point of a PT Symmetric System HAMIDREZA RAMEZANI, Univ of Texas, Rio Grande Valley — Controllable and yet robust confinement of light is vital for many applications. Flat bands induced by symmetries are proposed for robust localization of light. Here we show that localization arises at the exceptional point, where by breaking the parity-time symmetry and without entering to the broken phase a flat band is generated. Although the system is not in the exact phase, the localized field intensity remains conserve. The number of sites needed to accommodate the nondispersive mode of infinite lattice is four. The localization is robust against the changes in the system size and remains unperturbed even by reducing the system size to four coupled waveguides. The generated flat band is embedded in the dispersive bands. Consequently, it has infinite modes that can be considered as bound state in continuum. The exceptional point induced flat band provides a route for controllable light localization using active materials and new opportunities in imaging via gain and loss mechanism.

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