

Abstract Submitted  
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**Observation of a Passive PT Phase Transition** A. GUO, C. FURROW, VAS. P. KUNETS, S.-Q. YU , G. SALAMO, G.A. SIVILOGLOU, R. EL-GANAINY, K.G. MAKRIS, D.N. CHRISTODOULIDES, D. DUCHESNE, R. MORANDOTTI, M. VOLATIER-RAVAT, V. AIMEZ, DEPT. OF PHYSICS, UNIVERSITY OF ARKANSAS, FAYETTEVILLE, AR, USA TEAM, COLLEGE OF OPTICS & PHOTONICS-CREOL, UNIVERSITY OF CENTRAL FLORIDA, ORLANDO, FL, USA COLLABORATION, INRS-EMT, VARENNES, QUEBEC J3X 1S2, CANADA COLLABORATION, CENTRE DE RECHERCHE EN NANOFABRICATION ET EN NANOCARACTERISATION, UNIVERSITE DE SHERBROOKE, SHERBRO COLLABORATION — In 1998 Bender and Boettcher discovered that the spectrum of a system with PT-symmetric Hamiltonian can still be entirely real. This subject attracts more and more attention during the last few years. One of the intriguing characteristics of PT-symmetric systems is the possibility of a *phase transition* beyond which the spectrum ceases to be entirely real. This symmetry breaking occurs suddenly once the imaginary component of the potential exceeds a certain critical level. Here we report the observation of a phase transition in a passive PT-symmetric optical structure once the loss exceeds a certain critical value. This counterintuitive loss-enhanced transmission is purely an outcome of a spontaneous PT symmetry breaking.

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