



University of Crete
Department of Physics

Physics Colloquium

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Topological Photonics: The interplay of Symmetry and Nonlinearity

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ABSTRACT

In nature, there are numerous distinct phenomena mediated by symmetry, topology, and nonlinearity, even though a complex system simultaneously exhibiting all these features seems hard to attain. Recent advances with synthetic photonic structures, however, opened the door for exploring many intriguing phenomena arising from the interplay of these concepts. In particular, new directions of research have blossomed in non-Hermitian/topological photonics, driven by fundamental interest as well as demands for new device applications. In this talk, we highlight a few recent demonstrations on nonlinear topological photonics, including nonlinearity-induced mode coupling and emergent topological phenomena in chiral-symmetry photonic lattices, nonlinear tuning of parity-time symmetry and non-Hermitian topological states, and nonlinear manipulation of bound states in the continuum (BICs) in crystalline higher-order topological insulators (HOTIs).