UNIVERSITY OF CRETE
DEPARTMENT OF PHYSICS

CRETE CENTER FOR
QUANTUM COMPLEXITY
AND NANOTECHNOLOGY

ΓΕΝΙΚΟ ΣΕΜΙΝΑΡΙΟ ΤΜΗΜΑΤΟΣ ΦΥΣΙΚΗΣ

PHYSICS COLLOQUIUM

Thursday, 3 December 2015
17:00 -18:00
3rd Floor Seminar Room

"Nonhermitian photonics: PT-symmetry and beyond"

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Abstract

One of the frontiers of modern photonics is the engineering of the complex refractive index to create synthetic systems with novel functionalities. In most technologies, such as, photonic crystal fibers, metamaterials, and plasmonics, optical loss has been always considered an obstacle. However, we have recently demonstrated that parity-time (PT)-symmetric composite structures with balanced gain and loss distributions, can utilize loss as an advantage and have been proven to be important for integrated nanophotonics applications, such as optical isolators, and coupled nanolasers. In this framework of open photonic systems, we will present a larger class of synthetic materials in which the system is, on average, lossy. These geometries exhibit non-normal transient power growth and can function as lossy power amplifiers. The last part of this talk will be devoted to the new concept of constant-intensity waves that exist only in nonhermitian environments.