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ΔΙΑΛΕΞΗ

“Complex photonic media: \mathcal{PT} -symmetry and beyond”

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Αίθουσα σεμιναρίων στο ισόγειο του ΕΙΕ

Complex photonic media: \mathcal{PT} - symmetry and beyond

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One of the frontiers of modern photonics is the engineering of the complex refractive index to create new 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 (\mathcal{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 also 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*. This study may play a critical role in mitigating losses in subwavelength active plasmonic nanostructures.