

Topological photonics meets spintronics

tutorial

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Lecture Hall MPI | B.1.11

IMPRS
STNS

Abstract

Optical metamaterials can be designed such that the wavevector-space topology of photons supports new states of light with particular properties that can be exploited for designing new devices. Examples, are unidirectional waveguides allowing light to flow reflectionless around large imperfections. Also propagating electromagnetic waves with intrinsic topological properties are experimentally feasible. These allow charge and spin of electronic materials to be tuned in novel ways. The talk gives a general overview on the underlying principles highlighting how topological effects emerge in photonic crystals and coupled resonators as well as how propagating beams are generated and utilized to achieve new functionalities of charge-spin coupled electronic devices.

Speaker

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