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סמינר

Synthetic Space Photonic Topological Insulators Utilizing Dynamically-Invariant Structure

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Abstract

Topological insulators generally rely on a lattice, either in real-space (appearing as a periodic arrangement of sites) or in synthetic dimensions, in the form of a ladder of energy levels, cavity modes, or some other sequence of modes. In real-space, proximity facilitates coupling between adjacent lattice sites hence enabling transport, but topological insulators employing synthetic dimensions require a means of mode-coupling, to facilitate transport in the synthetic dimensions. Such mode coupling is generally obtained through modulation.

In my talk, I present a dynamically-invariant synthetic-space photonic topological insulators: a two-dimensional evolution-invariant photonic structure exhibiting topological properties in synthetic dimensions. This non-magnetic structure is static, lacking any kind of dynamic modulation, yet it displays an effective magnetic field in synthetic space and characterized by Chern number of one. I will show the evolution of topological edge states along the edge, and on the interface between two such structures with opposite synthetic-space chirality, and demonstrate their robust unidirectional propagation in the presence of defects. Such topological evolution-invariant structures can be realized both in photonics and cold atoms, thereby providing a fundamentally new mechanism for topological insulators.

ההרצאה תתקיים ביום רביעי, ה-14.10.2020 בשעה 12:30
דרך זום: קישור

The lecture will take place on Wednesday, 14.10.2020 at 12:30
via zoom: link

M.Sc. Student of Distinguished Professor Mordechai Segev