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סמינר

Multi-scale dynamical symmetries of electromagnetic fields and observation of new selection rules in nonlinear optics

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Abstract

Symmetries and their associated selection rules are extremely useful in all fields of science. In nonlinear optics, it has been shown that the symmetries of both matter and light's time-dependent polarization determine the allowed/forbidden processes (i.e. selection rules). I will present a general theory for selection rules in high harmonic generation that accounts for both microscopic and macroscopic (i.e. multi-scale) symmetries of the light-matter interaction. I will show our experimental result of selection rules of new symmetries, including elliptical dynamical symmetry and selection rules from light with discrete multi-scale symmetries. I will also present theoretical examples, including multi-scale twisted light and aperiodic electromagnetic vector fields that brings together all the DOF of light to form polarized space-time quasicrystals of light. This work paves the way for novel spectroscopic techniques in multi-scale systems as well as for imprinting complex structures in EUV-X-ray beams, attosecond pulses, or in the interacting medium itself.

ההרצאה תתקיים ביום רביעי, ה-11.11.2020 בשעה 12:30
קישור

The lecture will take place on Wednesday, 11.11.2020 at 12:30
via zoom: Link

Ph.D. Student of Professor Oren Cohen