



Solid State Institute
המכון למצב מוצק

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Light-matter interaction in Photonic Time-Crystals

Mark Lyubarov

Physics Department and the Solid State Institute
Technion

Abstract

In recent years, advances in time-varying electrodynamics have brought us closer to manipulating optical properties on unprecedented femtosecond timescales. This progress has paved the way for Photonic Time-Crystals (PTC), materials with temporal periodic modulations of the dielectric permittivity ϵ , opening up an exciting new regime in photonics. In my PhD research, I investigated the unique properties and applications of PTC. We found that both the PTC band structure and the transition path from a stationary medium to PTC regime have a large impact on the spontaneous emission of atoms in the medium. Additionally, we showed that PTC have promising potential in quantum technologies due to their intrinsic property to create pairs of entangled photonic modes, and suggested an algorithm for continuous variables cluster state generation. These concepts will be described along with ideas for future research on the quantum properties of light-matter interactions in time-varying media.

ההרצאה תתקיים ביום רביעי, ה-27.11.24 בשעה 12:30

באודיטוריום המכון למצב מוצק, קומת כניסה

The lecture will take place on Wednesday, 27.11.24 at 12:30
at the Solid State Institute auditorium, entrance floor

Ph.D Student of Distinguished Professor Moti Segev