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## Dynamical Symmetry Breaking in Floquet Systems: Application to High Harmonic Generation

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### Abstract

Floquet systems often exhibit dynamical symmetries (DS) that govern the time-dependent dynamics and result in selection rules. When the DS is broken by a perturbation, deviations from these selection rules are expected. While these deviations are often used for exploring the perturbations and perturbed dynamics, so far, they are not described by a general theory. In my talk, I will consider dynamical symmetry breaking in Floquet systems from a general perspective, formulating a general theory that analytically connects the symmetry-broken and fully-symmetric systems. Using a symmetry breaking laser field as a model perturbation, I will begin by explicitly showing that the broken symmetry induces 'selection rules' for the allowed/forbidden contributions to selection rule deviations. We will identify that these 'selection rules' are a manifestation of an unexplored class of DS in what at first glance appear to be symmetry broken systems but are in fact systems that exhibit dynamical symmetries in a high-dimensional synthetic space. Lastly, we will compare predictions obtained from the analytical theory to numerical calculations and experimental measurements of DS breaking in HHG. To conclude, I will discuss how the approach can be applied to other types of symmetry breaking due to intrinsic properties of the medium, or properties of the light-matter dressed system.

ההרצאה תתקיים ביום רביעי, ה-10.2.2021 בשעה 12:30

[קישור](#)

The lecture will take place on Wednesday, 10.2.2021 at 12:30  
via zoom: [Link](#)

**M.Sc. Student of Professor Oren Cohen**