



Solid State Institute
המכון למצב מוצק

TECHNION
Israel Institute
of Technology



הטכניון
מכון טכנולוגי
לישראל

SPECIAL SEMINAR

סמינר מיוחד

Attosecond control of high harmonics generation from widegap dielectrics using synthesized light fields

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Abstract

The phenomenon of high harmonic generation (HHG) from gases has been studied for several decades and is considered as one of the cornerstones of attosecond science. HHG from solids, however, was observed only 12 years ago, and in recent years has attracted growing interest in the ultrafast science community. Solid-state HHG allows detailed insight into the electronic structure of semiconductors. Similarly to the established gas-phase HHG, it could be harnessed for the generation of attosecond laser pulses, but with more compact experimental setups and lower intensity requirements for the driving laser.

In my talk, I will present a new route to generate attosecond pulses in a MgO crystal, a wideband dielectric. We synthesize a highly asymmetric light field by superimposing two phase-stable laser pulses at incommensurate frequencies. Our theory predicts that the attosecond pulse generation in the extreme ultraviolet (XUV) is feasible in our configuration. We will also introduce our experimental setup and present first experimental results and compare them with our predictions. Lastly, I will discuss the perspectives of applying attosecond light pulses in ultrafast microscopy.

**ההרצאה תתקיים ביום ראשון, ה-17.12.23 בשעה 12:30
באודיטוריום המכון למצב מוצק, קומת כניסה**

**The lecture will take place on Sunday, 17.12.23 at 12:30
at the Solid State Institute auditorium, entrance floor**

M.Sc. Student of Assistant Professor Michael Krueger