Solid State Institute
המכון למצב מוצק

TECHNION
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הטכניון
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SPECIAL SEMINAR

סמינר מיוחד

An Ultrafast Source of Electron Pulses Triggered by a Surface Plasmon

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Abstract

Ultrafast electron dynamics in nanostructures takes place on the femtosecond and picosecond time scales. Electron holography is an excellent pathway to image charges distributions in space with nanometer resolution. In order to achieve time resolution, a pulsed point source of electrons is required. Here we designed and characterized a low-energy pulsed electron point source triggered by surface plasmons. It is based on a gold nanotip with a single groove that couples ultrashort laser pulses (5fs duration) to the shank of the tip. This coupling causes a plasmon to travel to the sharp apex of the tip and emit a pulsed electron wavepacket. We observe multiphoton photoemission from the tip and also find signatures of light-induced tunneling for the first time. Our source is suitable for imaging ultrafast quantum dynamics with sub-10fs resolution.

ההרצאה תתקיים ביום שלישי, ה-27.07.2021 בשעה 12:30
באודיטוריום המכון למצב מוצק, קומת כניסה
The lecture will take place on Tuesday, 27.07.2021 at 12:30
at the Solid State Institute auditorium, entrance floor

M.Sc. Student of Assistant Professor Michael Krueger