



Solid State Institute
המכון למצב מוצק

TECHNION
Israel Institute
of Technology



הטכניון
מכון טכנולוגי
לישראל

SPECIAL SEMINAR

סמינר מיוחד

Binding Ultracold Atoms into Molecules Using Frequency-Chirped Light

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Abstract

Ultracold molecules are currently a topic of great interest in AMO physics, with potential applications ranging from ultracold chemistry to quantum computing. One method for forming such molecules is photoassociation, where two colliding ultracold atoms absorb a photon and are thereby bound into an excited molecule. We examine an extension of this process in Rb dimers, using frequency-chirped light on the nanosecond time scale. Within a single chirped pulse, the photoassociation process is followed by stimulated emission which transfers the excited molecule to a bound level of the electronic ground state. We show that this two-step process can be enhanced by a judicious shape of the chirp. Quantum simulations of the molecular formation are not only in good agreement with the experimental results, but also give insight into the enhancement mechanism. Our method for producing the nanosecond frequency-chirped pulses will also be briefly described.

ההרצאה תתקיים ביום שלישי, ה-19.3.19 בשעה 12:30

באודיטוריום המכון למצב מוצק, קומת כניסה

**The lecture will take place on Tuesday, 19.3.19 at 12:30
at the Solid State Institute auditorium, entrance floor**

Host: Assistant Professor Yoav Sagi