Solid State Institute
המכון למצב מוצק

TECHNION
Israel Institute
of Technology

הטכניון
מכון טכנולוגי
לישראל

SEMINAR

סמינר

Entanglement control of superconducting qubits and photons

Prof. Sophia Economou

Department of Physics
Virginia Tech
U.S.A.

Abstract

Entanglement is a key resource for novel quantum technologies, especially quantum computing. Different physical systems have their own merits and challenges, which need to be considered when creating and manipulating entanglement. For example, superconducting qubits can be easily connected to cavities in the form of planar waveguides and to each other via these cavity modes. On the other hand, one of their most notorious challenges is their dense spectrum ('spectral crowding'). Photonic qubits naturally do not interact with each other, and are thus long lived, but by the same token it is difficult to create entanglement between them, especially in a deterministic way. In this talk I will present our theoretical work addressing these challenges: for superconducting qubits, we have developed a technique for fast entangling gates by Speeding up Waveforms by Inducing Phases to Harmful Transitions (SWIPHT gates). For photons, we use solid-state emitters (quantum dots, defect centers in solids) to create deterministically entangled photonic "cluster states", the necessary resource in measurement-based quantum computing.

ההרצאה תתקיים ביום רביעי, ה-6.7.16 בשעה 12:30

בבניין המכון למצב מוצק, בחדר הסמינרים

The lecture will take place on Wednesday, 6.7.16 at 12:30

at the Solid State Institute, seminar room

Host: Assistant Professor Netanel Lindner