



## סמינר באלקטרואופטיקה ומיקרואלקטרוניקה Electro-optics and Microelectronics Seminar

You are invited to attend a lecture by

הנכם מוזמנים להרצאה של

**Yonatan Sharabi\***

Department of Electric Engineering  
Technion

בנושא:

### Aspects of Waves in Aperiodic Structures

We present a family of one-dimensional quasiperiodic crystals which display properties normally exclusive to periodic structures. While typical quasiperiodic structures have a fractal band structure with critically decaying eigenmodes, our family of structures can behave as a quasiperiodic or periodic system, depending only on the wavelength and the variance in the potential. In certain regimes we witness non-fractal band structure and propagation of light as Bloch-like modes, while in the other regime the structure exhibits all the features of a quasiperiodic potential.

On a related subject, we study the propagation of waves in a linearly-homogeneous medium with a spatially-random nonlinear coefficient. We find that waves propagating in this nonlinearly-disordered medium exhibit weak localization (coherent backscattering), with power-law decay instead of the exponential decay characteristic of Anderson localization. This anomalous behavior is a result of a negative feedback mechanism caused by the interplay between localization and nonlinearity, which also gives rise to unique statistical features where the fields in all realizations of disorder converge to the same intensity as the light penetrates deeper and deeper into the disordered medium.

\* סטודנט לתואר שני בהנחיית פרופסור גדי איזנשטיין ופרופסור מרדכי שגב.

The lecture will take place on Monday, 13/3/2017  
at 14:30 in room 1061  
Electrical Eng. Building  
Technion City

ההרצאה תתקיים ביום שני, 13/3/2017  
בשעה 14:30 בחדר 1061  
בבניין הפקולטה להנדסת חשמל  
קריית הטכניון

כיבוד קל יוגש לפני ההרצאה

