



The Center for
Light Matter Interaction
Tel Aviv University

LMI Seminar:

Opto-mechanics of standard systems: single-mode fibers and silicon-on-insulator Nanostructures

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13:00-14:00

Light refreshments and drinks will be served at 12:30

**Auditorium 011, Engineering Classroom Building, Faculty of
Engineering, Tel-Aviv University**

Abstract: Standard single-mode optical fibers and silicon-on-insulator photonic circuits are the most common and widely employed platforms of guided wave optics. Fibers have given us long-reach high-rate connectivity, and silicon photonics promises to do the same at the data center level. Both platforms are readily available for all to study and employ. The primary application of both fibers and silicon photonic circuits is the guiding of light in the linear regime. Neither is built for opto-mechanics. Yet, both systems can support interesting and useful interactions between optical and elastic waves, beyond what is commonly considered. nanostructures.

In this talk, I will present several examples of opto-mechanics in fibers and silicon photonics, providing a new take on how these everyday platforms may be used. Specific fiber-based results include the sensing of media outside cladding, where guided light cannot reach; non-reciprocal scattering and polarization switching; time-of-flight analysis of forward scatter; a new class of fiber lasers; and the optical stimulation of acoustic vortex beams. Silicon-based demonstrations include surface acoustic wave-photonic devices; the delay of signals on-chip by up to 175 ns; Microwave-photonic filters with a single, few MHz-wide passband; and electro-opto-mechanical oscillators.