



Solid State Institute
המכון למצב מוצק

TECHNION
Israel Institute
of Technology



הטכניון
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סמינר

Branched Flow of Light

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Abstract

When waves propagate through a weak disordered potential with correlation length larger than the wavelength, they form channels (branches) of enhanced intensity that keep dividing as the waves propagate.

I will introduce the universal phenomena of branched flow, and present our experiments on the first observation of branched flow of light. I will show that when light propagates in a thin soap membrane, smooth thickness fluctuations in the film act like a correlated disordered potential and focus the light into filaments that exhibit the characteristics of a branched flow, such as branching distance and intensity statistics. This phenomenon also occurs when the light source is not coherent. In this case, the structure of the branches is different, as is their statistics. Finally, I will show that the optically-driven flow in the liquid can act as a "tractor beam", when the optical beam is absorbed in the film, it triggers a fluid flow in the direction of the light source. An optical beam that attracts matter.

ההרצאה תתקיים ביום רביעי, ה-8.12.21 בשעה 12:30

באודיטוריום המכון למצב מוצק, קומת כניסה

The lecture will take place on Wednesday, **8.12.21** at **12:30**
at the Solid State Institute auditorium, entrance floor

**Ph.D. student of Distinguished Professor Mordechai Segev and
Professor Uri Sivan**