Department of Mathematics, BGU

Colloquium

On *Tuesday, December ,23 2025*

At *14:30 – 15:30*

In *Math 101-*

Netanel Levi (UCI)

will talk about

Dynamical and Dimensional Properties of Schrödinger Operators Under Finite-Rank Perturbations

Abstract: In this talk, we present several dynamical and fractal-dimensional ways of characterizing the spectral measures of Schrödinger operators, such as Rajchman behavior and Hausdorff/packing dimensions, and discuss the extent to which these properties are stable under rank-one perturbations.

We begin with the concrete setting of hafl-line Schrödinger operators, where a theorem of Gordon shows that generic rank-one perturbations eliminate pure point spectrum, ruling out the most extreme dynamical and dimensional behavior. I will then describe constructions demonstrating that properties only slightly weaker than pure point spectrum can, in fact, be entirely stable: for certain sparse hafl-line models, both packing-dimension-zero and non-Rajchman behavior persist for every rank-one perturbation.

In the second part, we examine how spectral dimensions behave when passing from the whole line to the hafl-line. I will present an operator whose spectral measure on the line has Hausdorff dimension one, whereas every hafl-line restriction - under any boundary condition - has dimension zero, even though the two settings dffier only by a finite-rank perturbation.