Department of Mathematics, BGU

Operator Algebras and Operator Theory

On *Wednesday, March ,15 2023*

At *12:00 – 13:00*

In *Minus 101*

N. Christopher Phillips (University of Oregon)

will talk about

Large finite values of Rokhlin dimension with commuting towers

Abstract: This is joint work with Ilan Hirshberg.

Recall that an action of a group G on a set X is free fi every nontrivial group element acts with no fixed points, such as the action of G on itsefl by translation.

Now assume G is compact, and consider an action of G on a unital C*-algebra. Finite Rokhlin dimension (with commuting towers, the only version we consider here) is one of several possible noncommutative versions of freeness. To put it in context, the action of G on G \times X by translation in the first variable has Rokhlin dimension zero, while the action x \mapsto - x of the two element group Z_2 on the sphere S^d has Rokhlin dimension d.

What are the possible values of Rokhlin dimension for actions on simple C*-algebras? Rokhlin dimension zero is just the (much older) Rokhlin property, and

many examples are known. Several examples are known with Rokhlin dimension exactly one, and one with Rokhlin dimension exactly two, but until now no examples were known to have Rokhlin dimension finite but greater than two, even without knowing the exact value.

We construct actions of finite groups and the circle S^1 on simple C-*algebras, in some cases even simple AF algebras, for which we can prove that the Rokhlin dimension is large but finite. One of our most precise results is that for every positive even integer d, there is an action of Z_2 on a simple unital AF algebra whose Rokhlin dimension is exactly d. However, much remains open about the possible values of Rokhlin dimension for actions of compact groups on simple C*-algebras.

Please Note the Unusual Day and Time!