Department of Mathematics, BGU

Noncommutative Analysis

On *Monday, April ,4 2022*

At *11:00 – 12:00*

In *32/114*

Chris Phillips (University of Oregon)

will talk about

The Radius of Comparison of a Commutative C*-algebra

Abstract: The radius of comparison of a C*-algebra is one measure of the generalization to C*-algebras of the dimension of a compact space. Part of the Toms-Winter conjecture says, informally, that a simple separable nuclear unital C*-algebra satisfying the UCT is classfiiable fi and only fi its radius of comparison is zero. Nonzero radius of comparison played a key role in one of the main families of counterexamples to the original form of the Elliott classfiication program.

It has been known for some time that the radius of comparison of C (X) is, ignoring additive constants, at most hafl the covering dimension of X. (The factor 1/2 appears because of the use of complex scalars in C*-algebras.) In ,2013 Elliott and Niu used Chern character arguments to show that the radius of comparison of C (X) is, again ignoring additive constants, at least hafl the rational cohomological dimension of X. This left open the question of which dimension the radius of comparison is really related to. The rational cohomological dimension can be

strictly less than the integer cohomological dimension, and there are spaces with integer cohomological dimension 3 but infinite covering dimension.

We show that, up to a slightly worse additive constant, the radius of comparison of C (X) is at least hafl the covering dimension of X. The proof is fairly short and uses little machinery.