

Department of Mathematics, BGU

Non-commutative Analysis Seminar

On Tuesday, November 30, 2021

At 11:00 – 12:00

In 72/123

ADAM DOR-ON (MUNSTER)

will talk about

Graded isomorphism problems for graph algebras

ABSTRACT: In a seminal 1973 paper, Williams recast conjugacy and eventual conjugacy for subshifts of finite type purely in terms of equivalence relations between adjacency matrices of the directed graphs. Williams expected these two notions to be the same, but after around 20 years the last hope for a positive answer, even under the most restrictive conditions, was extinguished by Kim and Roush.

In this talk, we will discuss operator algebras associated with adjacency matrices / directed graphs, which are naturally \mathbb{Z} -graded algebras. These operator algebras were first introduced by Cuntz and Krieger in tandem with early attacks on Williams' problem, and manifest several natural properties of subshifts through their classification up to various kinds of isomorphisms.

The works on Cuntz-Krieger algebras later inspired a systematic study of purely algebraic versions called Leavitt path algebras, promoting new interactions between pure algebra and analysis. A well-known conjecture of Hazrat

claims that two Leavitt path algebras are graded isomorphic if and only if their unital graded Grothendieck K_0 groups are isomorphic. The topological version of this problem asks for a characterization of graded (stable) isomorphisms between Cuntz-Krieger algebras in terms of equivariant K-theory.

A solution to these problems has been sought after by many, and although substantial progress has been made, a proof is still missing in general. In joint work with Carlsen and Eilers we were able to discover subtle obstructions to certain algebraic methods of proof for the latter conjecture, by building on the counterexamples of Kim and Roush

Please Note the Unusual Place!