Department of Mathematics, BGU

Operator Algebras Seminar

On *Wednesday, January ,7 2026*

At *13:00 – 14:00*

In *201*

Boris Bilich (Gottingen and U. Hafia)

will talk about

An obstruction to isomorphism of tensor algebras of multivariable dynamical systems

Abstract: A multivariable dynamical system (MDS) consists of a compact Hausdorff space X together with a finite family of continuous sefl-maps σ_i: X $\longrightarrow$ X. To each such system one naturally associates a non-sefladjoint operator algebra known as the tensor algebra, denoted by A(X, σ), which encodes the dynamical information algebraically. In the single-variable case (n = ,(1 Davidson and Katsoulis established that two tensor algebras are isomorphic fi and only fi the corresponding dynamical systems are conjugate. For n ≤ ,2 however, conjugacy is too strong to capture algebraic isomorphism, leading Davidson and Katsoulis to introduce the weaker notion of piecewise conjugacy, conjecturing it to be the correct criterion for classfiication.

In this talk, we disprove their conjecture in general. By identfiying a previously unnoticed topological obstruction to the existence of certain admissible maps into spaces of unitary matrices, we produce an explicit counterexample

consisting of two piecewise conjugate 4-variable systems on a two-dimensional compact space whose tensor algebras are not isomorphic. This result leaves the classfiication problem wide open and highlights the necessity of more refined invariants for tensor-algebra isomorphism.