

Department of Mathematics, BGU

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# Operator Algebras Seminar

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On *Wednesday, November 12, 2025*

At *13:00 – 14:00*

In *201*

Ilan Hirshberg (BGU)

will talk about

## **Isomorphisms between infinite free product $C^*$ -algebras**

Abstract: A  $C^*$ -probability space is a pair  $(A, \tau)$  consisting of a  $C^*$ -algebra and a tracial state  $\tau$  on  $A$ . For any two  $C^*$ -probability spaces, there's a definition of a reduced free product  $C^*$ -algebra  $(A, \tau) \ast_r (B, \sigma)$ . This is a generalization of the case of reduced group  $C^*$ -algebras: if  $G$  and  $H$  are discrete groups, then the reduced free product of  $C^*_{\text{red}}(G)$  and  $C^*_{\text{red}}(H)$  is the reduced group  $C^*$ -algebra of the free product  $G \ast H$ . We show that if  $A$  decomposes as a nontrivial reduced free power of infinitely many copies of separable  $C^*$ -probability spaces, then  $C([0,1]) \ast_r A$  is isomorphic to  $A$ . Several other related isomorphism theorems are obtained as well. I will review some background and outline the proof. This is joint work with N. Christopher Phillips.