

Department of Mathematics, BGU

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# Operator Algebras

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*On Tuesday, January, 3 2017*

*At 16:00 – 17:00*

*In Math 101-*

Magdalena Georgescu (BGU)

will talk about

## **Cross products and the strong Connes spectrum (after Kishimoto)**

Abstract: The context for this series of talks is the topic of an action  $\alpha$  of a locally compact abelian group  $G$  on a  $C^*$ -algebra  $A$ , and the resulting properties of the crossed product of  $A$  by  $G$ . In the first two talks, we will lead up to the definition of the strong Connes spectrum of the action  $\alpha$ , and discuss elements of the multiplier algebra of the crossed product which are integrable with respect to the dual action.

The goal for the final talk on this topic is to discuss the proof of the following result:

**Theorem (Kishimoto, 1980)** Suppose  $(A, G, \alpha)$  is a  $C^*$ -dynamical system, where  $G$  is a locally compact abelian group. Then the cross product  $A \rtimes_{\alpha} G$  is simple if and only if  $A$  is  $\alpha$ -simple and the strong Connes spectrum of  $\alpha$  is equal to the dual group of  $G$ .

The main references are the following two articles:

- Olesen & Pedersen - Applications of the Connes spectrum to  $C^*$ -dynamical systems (1978)
- Kishimoto - Simple crossed products of  $C^*$ -algebras by locally compact abelian groups (1980)