Department of Mathematics, BGU

Non-commutative Analysis Seminar

On *Tuesday, October 26, 2021*

At *11:00 – 12:00*

In *seminar room -101*

Tattwamasi Amrutam (BGU)

will talk about

Generalized Powers' averaging for commutative crossed products

Abstract: In 1975, Powers proved that the free group on two generators is a $C^\star$-simple group. The key insight in Powers's proof of the $C^\star$-simplicity is that the left regular representation of $\mathbb{F}_2$ satisfies Dixmier type averaging property. Using the pioneering work of Kalantar-Kennedy, it was shown by Haagerup and Kennedy independently that the $C^\star$-simplicity of the group Γ is equivalent to the group having Powers' averaging property. In this talk, we introduce a generalized version of Powers' averaging property for commutative crossed products. Using the notion of generalized Furstenberg boundary introduced by Kawabe and Naghavi (independently), we show that the simplicity of the commutative crossed products $C(X) \rtimes_r \Gamma$ (for minimal Γ-spaces X) is equivalent to the crossed product having generalized Powers' averaging. As an application, we will show that every intermediate $C^\star$-subalgebra $\mathcal{A}$ of the form $C(Y) \rtimes_r \Gamma \subseteq \mathcal{A} \subseteq C(X) \rtimes_r \Gamma$ is simple for an inclusion $C(Y) \subset C(X)$ of minimal Γ-spaces whenever $C(Y) \rtimes_r \Gamma$ is simple. This is a joint work with Dan Ursu.