Department of Mathematics, BGU

Operator Algebras and Operator Theory

On *Monday, March ,4 2024*

At *14:00 – 15:00*

In *201*

Jeet Sampat (Technion)

will talk about

Biholomorphisms between subvarieties of noncommutative operator balls

Abstract: Given a d-dimensional $)d < \infty($ operator space $\mathcal{E}$ with basis $\{Q_1, \cdots, Q_d\}$, consider the corresponding noncommutative (nc) operator ball $\mathbb{D}_Q := \{X \in \mathbb{M}^d : \| \sum_j Q_j \otimes X_j \| < 1\}$. In this talk, we discuss the problem of extending certain biholomorphic maps between subvarieties $\mathfrak{V}_1$ and $\mathfrak{V}_2$ of nc operator balls $\mathbb{D}_{Q^{(1)}}$ and $\mathbb{D}_{Q^{(2)}}$.

For trivial reasons, such an extension cannot exist in general, and we discuss several examples to showcase the obstructions. When the operator spaces $\mathcal{E}^{(1)}$ and $\mathcal{E}^{(2)}$ are both injective, and the subvarieties $\mathfrak{V}_1$ and $\mathfrak{V}_2$ are both homogeneous, we show that a biholomorphism between $\mathfrak{V}_1$ and $\mathfrak{V}_2$ can be extended to a biholomorphism between $\mathbb{D}_{Q^{(1)}}$ and $\mathbb{D}_{Q^{(2)}}$. Moreover, we show that fi such an extension exists then there exists a linear isomorphism between $\mathbb{D}_{Q^{(1)}}$ and $\mathbb{D}_{Q^{(2)}}$ that sends $\mathfrak{V}_1$ to $\mathfrak{V}_2$.