Department of Mathematics, BGU

Operator Algebras

On *Thursday, July ,2 2020*

At *14:10 – 15:00*

In *Online*

Orr Shalit (Technion)

will talk about

Matrix ranges, fields, dilations and representations

Abstract: In my talk I will present several results whose unfiying theme is a matrix-valued analogue of the numerical range, called the matrix range of an operator tuple. After explaining what is the matrix range and what it is good for, I will report on recent work in which we prove that there is a certain "universal" matrix range, to which the matrix ranges of a sequence of large random matrices tends to, almost surely. The key novel technical aspects of this work are the (levelwise) continuity of the matrix range of a continuous field of operators, and a certain quantitative matrix valued Hahn-Banach type separation theorem. In the last part of the talk I will explain how the (unfiorm) distance between matrix ranges can be interpreted equivalently as a "dilation distance", which can be interpreted as a kind of "representation distance". These vague ideas will be illustrated with an application: the construction of a norm continuous family of representations of the noncommutative tori (recovering a result of Haagerup-Rordam in the d=2 case and of Li Gao in the d>2 case).

Based on joint works with Malte Gerhold, Satish Pandey and Baruch Solel.