Department of Mathematics, BGU

OA/OT Seminar

On *Tuesday, January ,7 2020*

At *11:00 – 12:00*

In *101-*

Salma Kuhlmann (University of Konstanz)

will talk about

From finite to infinite dimensional moment problems

Abstract: In this talk we give an introduction to (real) infinite dimensional moment problems, i.e. for measures supported on real infinite dimensional spaces. We will focus on the following problem: when can a linear functional on a unital commutative real algebra A be represented as an integral w.r.t. a Radon measure on the real character space X(A) equipped with the Borel σ-algebra generated by the weak topology? Our main idea is to construct X(A) as a projective limit of the character spaces of all finitely generated subalgebras of A, to be able to exploit the classical finite dimensional moment theory in the infinite dimensional case. We thus obtain existence results for representing measures defined on the cylinder σ-algebra on X(A), carried by the projective limit construction. If in addition the well-known Prokhorov (ε-K) condition is fuflilled, then we can solve our problem by extending such representing measures from the cylinder to the

Borel σ-algebra on X(A). These results allow us to establish e.g. infinite dimensional analogues of the classical Riesz-Haviland.

Our work was motivated by the paper [Ghasemi-Kuhlmann-Marshall: Moment problem in infinitely many variables, Israel Journal of Mathematics, Volume ,212 989-1012 (2016) [where the case when A is the algebra of real polynomials in infinitely many variables is considered. Our projective limit technique provides alternative proofs to the results of [GKM2016].

(Joint work with Maria Infusino, Tobias Kuna and Patrick Michalski)

Please Note the Unusual Time!