VICTOR VINNIKOV, Ben Gurion University of the Negev
Hermitian noncommutative kernels and their factorizations

Free noncommutative function theory originated in the work of Taylor in the early 1970s. It became an active field in the last decade with a large body of results and numerous relations to free algebra, operator space theory, free probability, etc. The main idea is to replace functions between vector spaces by graded functions between square matrices of all sizes over these vector spaces that preserve direct sums and similarities. In this talk I will discuss completely positive noncommutative kernels which are the analogue of usual positive kernels as well as of completely positive maps, and a factorization result for hermitian noncommutative kernels which is analogous to Positivstellensaetze in real algebraic geometry (and closely related to Positivstellensaetze for the free algebra due to Helton, McCullough-Putinar, and others). The talk is based on joint work with G. Marx and J. Ball.