

Department of Mathematics, BGU

Operator Algebras and Operator Theory

On Monday, December, 18 2017

At 16:00 – 17:00

In 101-

Arel Pinhas (BGU)

will talk about

de Branges Spaces on Compact Riemann Surfaces

Abstract: It is a well-known fact that 1D systems and non-selfadjoint operators are closely related via the notion of operator colligation. The study of the characteristic function of a colligation is related to the study of de Branges spaces of analytic functions on an open set in the Riemann sphere. It allows us, for instance, to give an alternative proof for the Beurling's Theorem using Livšic Colligations and de Branges spaces.

In this talk, I will characterize de Branges spaces, i.e. reproducing kernel Hilbert spaces of analytic sections defined on a real compact Riemann surface, rather than on the Riemann sphere. This is done through the vessel theory, a generalization of the colligation theory to the case of n -tuple commuting non-selfadjoint operators. The characteristic function of a vessel is then a bundle mapping defined on a compact Riemann surfaces and which also carries the input-output relation of a 2D system. As a consequence, I will introduce a Beurling-type Theorem on finite bordered Riemann surfaces.