המכללה האקדמית
להנדסה בתל-אביב
אפקה
הנדסה גבוהה

Exact Sciences Seminar
Monday 17.12.2018 on 15:00-16:00, Ficus 303

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Operator algebras and noncommutative analytic geometry.

Abstract

The Hardy space $H^2(\mathbb{D})$ is the Hilbert space of analytic functions on the unit disc with square summable Taylor coefficients is a fundamental object both in function theory and in operator algebras. The operator of multiplication by the coordinate function turns $H^2(\mathbb{D})$ into a module over the polynomial ring $\mathbb{C}[z]$. Moreover, this space is universal, in the sense that whenever we have a Hilbert module $\mathcal{H}$ over $\mathbb{C}[z]$, such that z acts by a pure row contraction, we have that $\cH$ is a quotient of several copies of $H^2(\mathbb{D})$ by a submodule.

There are two multivariable generalizations of this property, one commutative and one free. I will show why the free generalization is in several ways the correct one. We will then discuss quotients of the noncommutative Hardy space and their associated universal operator algebras. Each such quotient naturally gives rise to a noncommutative analytic variety and it is a natural question to what extent does the geometric data determine the operator algebraic one. I will provide several answers to this question.

Only basic familiarity with operators on Hilbert spaces and complex analysis is assumed.

Coordinators: Dr. G. Ben-Simon, Prof. I. Goldman, Prof. Y. Stancescu, Prof. D. Fishelov and Dr. Neta Rabin

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