19th Workshop: Noncommutative Probability, Noncommutative Harmonic Analysis and Related Topics with Applications, 31.07-6.08.2022, Będlewo

ABSTRACT

Paweł Pietrzycki (Jagiellonian University) Characterizations of spectral measures Abstract:

In 2006 Kiukas, Lahti and Ylinen asked the following general question. When is a positive operator measure projection valued? A version of this question formulated in terms of operator moments was posed in [1]. Let T be a selfadjoint operator and F be a Borel semispectral measure on the real line with compact support. For which positive integers p < q do the equalities $T^k = \int x^k F(x)$, k = p, q, imply that F is a spectral measure? In this talk, we show that the answer is affirmative if p is odd and q is even, and negative otherwise. The case (p,q) = (1,2) closely related to intrinsic noise operator was solved by several authors including Kruszyński and de Muynck as well as Kiukas, Lahti and Ylinen. The counterpart of the second problem concerning the multiplicativity of unital positive linear maps on C^{*}-algebras will also be discussed. This talk is based on joint work with Jan Stochel.

- P. Pietrzycki, J. Stochel, Subnormal nth roots of quasinormal operators are quasinormal, J. Funct. Anal. 280 (2021), 109001.
- [2] P. Pietrzycki, J. Stochel, Two-moment characterization of spectral measures on the real line, preprint.