

The Hong Kong Polytechnic University
Department of Applied Mathematics

Colloquium

Monotone matrix maps

by

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Abstract

This talk is based on series of joint works with G. Dolinar, M. Efimov and J. Marovt. The first results on transformations preserving matrix invariants is due to Frobenius. This result describes the structure of linear maps T preserving the determinant function, i.e., $\det X = \det T(X)$ for all X . Later on there were several extension of this result which are due to Diedonnie, Schur, Dynkin and others.

Along the same lines, there was intensive investigation of maps preserving order relations on operator and matrix algebras during the past decades. Monotone transformation with respect to a particular order relation is a map which preserves this order. We show that surjective monotone additive transformations on matrices with respect to several orders are automatically invertible and provide a complete characterization of such transformations. Also we provide natural extensions of these orders for bounded operators on infinite dimensional Hilbert spaces, prove that they are indeed extensions of classical orders under consideration, and investigate corresponding monotone transformations.

Date : 25 January, 2019 (Friday)

Time : 2:30pm – 3:30pm

Venue : TU717, The Hong Kong Polytechnic University

*** * * ALL ARE WELCOME * * ***