

Department of Mathematics and Statistics

Colloquium Announcement

Friday,
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University of Saskatchewan

ARTS Building
Room 108
3:30 PM

Extension of Hilbert's 1888 theorem to Even Symmetric Forms

Guest Speaker: Professor Salma Kuhlmann
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Abstract:

A multivariate real form (homogeneous polynomial with real coefficients) is said to be positive semi-definite (PSD) if it is non-negative when evaluated at every tuple of real numbers.

If a form is a sum of squares of real forms (SOS) it is clearly PSD.

For forms of degree $2d$ in n -variables, Hilbert's 1888 celebrated Theorem characterized the pairs $(n, 2d)$ for which the cones of SOS and that of PSD forms coincide.

Later, Choi, Lam and Reznick re-considered Hilbert's 1888 under the additional assumption that the forms under consideration are symmetric (i.e. invariant under the action of the symmetric group).

In this talk, we will first present the work of Hilbert, Choi-Lam-Reznick, and a generalization thereof to the case of $\{n \text{ even}\}$ symmetric forms. The latter results are obtained in the Dissertation of my PhD student Charu Goel.



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