

PhD research topic proposal
BME, Doctoral School of Mathematics and Computer Science

Name of supervisor:

András Kroó

Degree:

DSc

Title of the topic:

Extremal properties of Multivariate Polynomials

Short description:

The proposed PhD research topic is related to certain modern aspects of the Constructive Function Theory mostly dealing with the extremal properties of multivariate polynomials. Virtually each area of mathematics from algebraic number theory and algebraic geometry to Fourier analysis and computer science relies heavily on the extremal analytic properties of polynomials. This theory is well developed in case of univariate polynomials. In past decades the main attention has been focused on extending it to the multivariate setting. The main problems studied in the framework of this PhD Program are related to multivariate extensions of the classical polynomial inequalities (Bernstein, Markov, Remez, Schur, Nikolskii inequalities), multivariate lacunary polynomial approximation, incomplete polynomials, Müntz type theorems, Bernstein-Markov type inequalities for multivariate polynomials on convex and star like domains in uniform and integral norms, Remez type inequalities for multivariate polynomials on star like domains and convex bodies, admissible and optimal meshes for polynomials of several variables. Weierstrass type theorems for approximation by homogeneous polynomials on the boundary of convex domains, approximation of convex bodies by convex algebraic level surfaces.

Requirements:

Solid background in Real and Complex Analysis

Contact:

36 1 463 1111 /5705 ext.

E-mail:

kroo@renyi.hu

Place of work:

Department of Analysis, Institute of Mathematics, BME

Statement: *The conditions of the research above are satisfied, the theme is confirmed by the Head of the Department/Institute*