

Interpolation by polynomials and rational functions: several intervals, several variables

Lukashov, A.L. (Moscow Institute of Physics and Technology & Saratov State University, Russia)

This lecture is devoted to two different directions in the interpolation theory. The first one is classical (Lagrange) interpolation by polynomials on real sets. Main goal here is to understand which sets are "good" or "bad" for the interpolation because of the behavior of related Lebesgue constants. One of possible approaches is to begin with several intervals. A survey of recent results by A.Kroó, J. Szabados and the author is presented.

The second direction is multivariate interpolation. Classical (pointwise) interpolation can not be realized without many additional restrictions, what makes it essentially different from univariate case. A natural (in a sense) generalization of the classical Lagrange interpolation by polynomials for several variables is Kergin (mean-valued) interpolation. We present recent extension of this approach to interpolation by rational functions. We discuss related results by the author and C.Akal.