Stable approximation, real interpolation and applications

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Session: 4. Banach Spaces and Operator Theory with Applications

If we try to approximate the function f from L^p by the ball of L^∞, we discover that the element of best approximation does not depend on $p < \infty$. This simple fact lies at the core of the Marcinkiewicz interpolation theorem.

In this talk we present domains, different than the ball of L^∞, with element of best approximation that is invariant with respect to the L^p-norm. It turns out that domains with this property are related to the classical Hardy-Littlewood-Pólya majorization and K-monotonicity of the couple (L^1, L^∞).

We will show some recent applications of this type of domains, and their elements of best approximation, to smooth approximation of Wiener process and buffer management problems in communication theory. Algorithms for construction of the element of best approximation will also be considered.