# New Estimates for Condition Numbers of Radial Basis Function Interpolation Matrices

Benedikt Diederichs [1]

Armin Iske

Kernel matrices arising in interpolation by radial basis function are well-studied objects. Estimates of their condition numbers have been established by the very influential papers by Ball, Narcowich and Ward, and Schaback. Given a set of interpolation sites, these estimates rely on the separation distance of the sites alone. Recent progress in estimating exponential sums allows to improve these well-known estimates significantly. We give improved estimates for the smallest and largest eigenvalues of such matrices and show that they are almost optimal.

[1]University of Hamburg, Germany (benedikt.diederichs@uni-hamburg.de)