

Tractability of multivariate integration in Hermite spaces

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Hermite spaces are reproducing kernel Hilbert spaces of functions on the \mathbb{R}^s which are based on Hermite polynomials. We study multivariate integration of functions which belong to weighted Hermite spaces. These functions are characterized by the property that their Hermite coefficients decay exponentially fast. We show that Gauss-Hermite rules achieve an exponentially fast decay of the worst-case error and we present sufficient and necessary conditions on the weights for various notions of tractability. The presentation is closed with a brief discussion of the same problem but with only polynomially decreasing Hermite coefficients.

This is joint work with Christian Irrgeher, Peter Kritzer and Gunther Leobacher (JKU Linz).