

NUMERICAL INTEGRATION

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In this talk we discuss various results on numerical integration for functions defined on a domain $D \subseteq \mathbb{R}^d$. In quasi-Monte Carlo theory one considers the domain $[0, 1]^s$. In this case one wants quadrature points which are well distributed. If the dimension is large this can be a challenging problem. Another problem which often occurs is that the domain is not the unit cube (a standard example is \mathbb{R}^s). In this case one can either use some transformation to obtain an integral over the unit cube or construct quadrature rules in the given domain. Applications of such integration techniques include option pricing, the estimation of the expectation value of solutions of PDEs with random coefficients and some problems from machine learning.

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