Adaptive sparse quadrature for high-dimensional integration with Gaussian distribution: application to Bayesian inverse problems.

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In this talk, we will present convergence analysis of an adaptive sparse quadrature for high/infinite-dimensional integration with respect to Gaussian distributed random variables. Under certain assumptions on the univariate quadrature and the regularity of the integrand, we will demonstrate the dimension-independent convergence property of the proposed algorithm. We apply this algorithm to infinite-dimensional Bayesian inverse problems in combination of a Hessian-based parametrization of the uncertain parameter.