Quasi-Monte Carlo meets kernel cubature

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Quasi-Monte Carlo (QMC) methods of order α are analysed with respect to weighted Sobolev spaces to prove their convergence rates or robustness with respect to the underlying parameter dimension. In particular these spaces are reproducing kernel Hilbert spaces equipped with an explicitly known kernel function depending on the α at hand. In this talk we present a random cubature rule based on regularity class adapted optimal sampling strategies which allow for higher convergence rates in expectation or pointwise almost surely. Numerical results then support the theoretical findings.