Einladung

zum Vortrag im Rahmen des **SFB Colloquiums** (Standort Linz), mit dem Titel

Optimal order quasi-Monte Carlo integration in weighted Sobolev spaces of arbitrary smoothness

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Abstract: In this talk, we investigate quasi-Monte Carlo integration using higher order digital nets in weighted Sobolev spaces of arbitrary fixed smoothness $\alpha \in \mathbb{N}, \alpha \geq 2$, defined over the s-dimensional unit cube. We prove the existence of randomly digitally shifted order β digital nets achieving the convergence of the worst-case error of order $N^{-\alpha}(\log N)^{(s-1)/2}$, which is best possible, when $\beta \geq 2\alpha$. The exponent of the logarithmic term, i.e., $(s-1)/2$, is improved compared to the known result by Baldeaux and Dick, in which the exponent is $s\alpha/2$. We also discuss deterministic constructions of higher order digital nets which achieve the optimal convergence rate.
This is a joint work with Takashi Goda and Takehito Yoshiki.