





Institut f. Analysis und Computational Number Theory (Math. A)

Habilitationskolloquium

Freitag, 10.10.2014, 10:30 Uhr

Seminarraum 2 (Geometrie), TU Graz, Kopernikusgasse 24, 4. Obergeschoß

Tractability of Quasi-Monte Carlo integration in high dimensions

DR. CHRISTOPH AISTLEITNER

(TU Graz/JKU Linz)

The Quasi-Monte Carlo method is a classical method for numerical integration of a function on the multidimensional unit cube. Its basic justification is the Koksma-Hlawka inequality, which states that the deviation between the integral of a function and the average value of the function, evaluated at a certain set of sampling points, can be estimated in terms of the variation of the function and the so-called discrepancy of the set of sampling points. Consequently, low-discrepancy point sets can be used for numerical integration of multivariate functions. For several decades, the dimension of the problem was assumed to be fixed, and the cardinality of the point set was allowed to tend to infinity. Recently, special attention has been paid to the case when the dimension is large, and the cardinality of the point set has to remain moderate (in comparison with the dimension). We present some of the known results for this problem together with important proof techniques, which connect the problem with the theory of empirical processes indexed by sets and with metric entropy theory.

R.Tichy/O.Steinbach