

# MATHEMATIKKOLLOQUIUM

Das Institut für Mathematik lädt zu folgendem Vortrag ein:

**Aicke Hinrichs**

University of Jena, Germany

## Multivariate Integration - Tractability or Curse of Dimension?

We study numerical integration problems for functions from a class  $F_d$  of functions of  $d$  variables, say  $f : [0, 1]^d \rightarrow \mathbb{R}$ . Given a class of admissible algorithms, the problem is polynomially tractable if there exists an algorithm with computation cost bounded by  $Cd^p\varepsilon^{-q}$  where  $\varepsilon > 0$  is the required error bound. The problem suffers from the curse of dimension if any algorithm has cost exponential in  $d$  for some  $\varepsilon > 0$ .

Classical error bounds usually provide the order of convergence for fixed  $d$  but ignore the influence of constants depending on  $d$ . We illustrate the difference on some examples which were recently explored including:

- tractability or curse of dimension for classes of functions with special properties like monotonicity or convexity
- tractability and curse of dimension for uniformity measures of point distributions like discrepancies
- tractability via randomization, in particular importance sampling.

**Zeit: Montag, den 14. März 2011 um 17.15 Uhr**

**Ort: Victor-Franz-Hess Haus, Technikerstraße 25, HS E**

**Gäste sind herzlich willkommen!**

*Christel & Stefan Geiß*