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## SFB Colloquium Series

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It is a pleasure to announce a guest lecture with the title

# Multivariate Integration with Sparse Grids

**SPEAKER: Jens Oettershagen**, University Bonn

**TIME:** Monday, 12th May 2014, 13:00 PM

**LOCATION:** Science Park III, S3 048, University Linz

A classical approach to integrate multivariate functions is using a full tensorproduct of univariate quadrature rules. This approach is very simple but suffers from the curse of dimensionality, i.e. the required number of point evaluations depends exponentially onto the dimension.

Sparse grids still rely on tensorproducts of univariate quadratures, but use certain linear combinations of smaller grids to reduce the required number of points. This approach achieves a close to optimal rate of convergence while retaining the structure of a grid. Thus it is possible to use the so-called dimension-adaptive sparse grid construction for problems where the importance of different coordinate directions is not a priori known.

Since sparse grids are based on univariate quadrature rules we will also discuss their optimal construction with respect to the worst-case error in a reproducing kernel Hilbert space, e.g. the Hermite space that was recently introduced by Irrgeher and Leobacher.

The lecture will be followed by a general discussion.

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