

Einladung zum Vortrag

## **Discontinuous Galerkin schemes for massively parallel applications**

**Prof. Dr. Claus-Dieter Munz**

IAG - Institut für Aerodynamik und Gasdynamik  
Universität Stuttgart, Pfaffenwaldring 21, 70550 Stuttgart

In this talk, I will show some new developments in the construction of discontinuous Galerkin schemes for unsteady compressible fluid flow. This covers space as well as time discretization: The so called spectral element DG approach is reviewed, a predictor- corrector time-stepping, which allows a time consistent local time-stepping, is explained and reconstructed DG schemes being some unification of the discontinuous Galerkin and the finite volume framework is proposed. The aspect of efficient simulations on massively parallel systems is addressed in all these considerations. The behavior of high order accuracy for the simulation of turbulent flow is shown. We will show a comparison with respect to the computational effort for modal and spectral element DG schemes and a finite difference scheme on Cartesian grids. The last part of the talk then contains the discussion of massively parallel simulations and how to hide the latency of data communication behind number crunching. Results about strong scaling for more than 100.000 processors are shown – with calculations down to a distribution of one grid cell per processor.

**Donnerstag, 1. Dezember 2011**  
**14:00 Uhr**

**MW 2250**

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