

MATHEMATISCHES INSTITUT DER UNIVERSITÄT BAYREUTH

DER GESCHÄFTSFÜHRENDE VORSTAND

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29. Juni 2022

Einladung

zum

Mathematischen Kolloquium

in Kooperation mit dem Elitestudiengang Scientific Computing

Am Donnerstag, dem 7. Juli 2022, spricht

Herr Prof. Dr. Jochen Schütz,
Department of Mathematics and Statistics
Hasselt University, Belgium
Gast am Lehrstuhl Wissenschaftliches Rechnen
bei Herrn Prof. Dr. Vadym Aizinger

über das Thema

Multiderivative time integration for PDEs

Abstract

In this talk, we review recent results of our work on modern time integration procedures for differential equations. The developed schemes are of predictor-corrector type, of very high-order, and can be executed parallel-in-time using a pipelining procedure. The schemes rely on the multiderivative paradigm, i.e., instead of only taking $y' = f(y)$ into account, also $y'' = f'(y)f(y)$ is explicitly added. Transferring this to PDEs using a Lax-Wendroff approach yields, even for implicit schemes, severe restrictions on the time-step size. We show how this can be remedied to obtain uniformly stable schemes. Results for the combination of the time-integrator with the discontinuous Galerkin scheme for the compressible Navier-Stokes equations are shown.

Beginn: 16.30 Uhr (Kaffee/Tee ab 16.00 Uhr im Seminarraum 748)

Ort: Hörsaal H 17, Gebäude Naturwissenschaften II, Universitätsgelände

gez. M. Stoll