

# BERNOULLIS TAFELRUNDE

GRADUATE STUDENT SEMINAR

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Virtual seminar

CARINA SANTOS

University of Basel

## **Runge-Kutta based local time-stepping methods for forced wave equations**

### ABSTRACT

One of the most important hyperbolic partial differential equation (PDE) is the wave equation. Using the method of lines, we can write the PDE as a system of ordinary differential equations (ODEs) in time. For solving this system of ODEs one may use the finite element method (FEM), with the explicit "Runge Kutta"-method. Accordingly, the choice of a stable time step satisfying the Courant-Friedrichs-Lewy (CFL) condition is required. In this talk I present the Runge-Kutta local time-stepping method and some numerical results with optimal convergence for a source term not equal to zero.