

# SALZBURG MATHEMATICS COLLOQUIUM

Winter 2023/24

Thomas Wihler (Bern)

## „The discontinuous Galerkin time stepping method – a resilient companion of parabolic evolution models“

January 25, 2024

Abstract:

We begin with a brief review of the origins of the discontinuous Galerkin (dG) time-step method in the 1970s, and continue with some remarks on more recent developments (together with a striking result on exponential convergence) in the context of higher- and variable-order temporal approximations.

The main focus of the talk is on a recently developed PDE-inspired discrete calculus for the dG time stepping approach, which allows for a completely novel stability analysis, and thus, for new PDE-like continuous dependence estimates. Such results, while interesting in their own right, are crucial for the numerical analysis of nonlinear parabolic PDE; here, some ongoing work on finite-time blow-up models will conclude the presentation.

Thursday, **15:00-15:45**  
Hörsaal 414, 1. Stock