



# Mathematisches Kolloquium

## *How astrophysical applications lead to challenges in mathematical fluid mechanics*

**Sprecher: Prof. Dr. Christian Klingenberg | Uni Würzburg**

Eingeladen von Prof. Dr. Emil Wiedemann

**20.05.2022 | 14:30 Uhr | Hörsaal H8**

Modeling astrophysical phenomena is typically described by partial differential equations. These need to be solved with numerical methods to gain better understanding of the phenomenon at hand.

We will model the evolution of stars using the three space dimensional compressible Euler equations. Even though the numerical methodologies for this equation are well developed, this application challenges the numerical methods so far. The challenge goes far, since the known numerical techniques are based on deep one-space-dimensional insights by Godunov, and the new numerical methods needed are multi-dimensional. We will give work in progress on how to tackle this problem.

This is joint work among others with Fritz Röpke (astrophysics, Heidelberg).

**Der Vortrag ist für ein breites Publikum geeignet**