



universität  
wien

Fakultät für Mathematik

## Mathematisches Kolloquium

Mittwoch, 9. Oktober 2019

Sky Lounge

### EINLADUNG

**Michael Kunzinger**

(Uni Wien)

**„Black Holes, Singularities, and Triangles - Low  
regularity Lorentzian geometry in General Relativity“**

## **„Black Holes, Singularities, and Triangles - Low regularity Lorentzian geometry in General Relativity“**

### **Abstract:**

*In recent years, the study of low regularity spacetimes has received increased attention both from mathematical physicists and from Lorentzian geometers. The first part of this talk provides a brief introduction to the problem of singularities in General Relativity and describes ways of extending the classical singularity theorems of S. Hawking and R. Penrose to spacetime metrics of reduced regularity. After highlighting some of the surprising breakdowns of causality theory that occur by further lowering the regularity (below the class of Lipschitz metrics), we then turn to the theory of Lorentzian length spaces. This is an analogue of the theory of (metric) length spaces that uses triangle comparison methods to give meaning to (sectional) curvature bounds and singularities in great generality (beyond, but compatible with, the setting of differentiable manifolds and spacetime metrics). Finally, we discuss some current directions of research in this area.*

**15.45 Uhr: Kaffeejause**

**16.15 Uhr: Vortrag**

**vinum cum pane im Anschluss**

Roland Donniger  
Christian Krattenthaler