EBERHARD KARLS
UNIVERSITÄT
TÜBINGEN

Mathematisch-Naturwissenschaftliche Fakultät

Fachbereich Mathematik
AB Geometrische Analysis, Differentialgeometrie und Relativitätstheorie

Oberseminar
Geometrische Analysis, Differentialgeometrie und Relativitätstheorie

Am Donnerstag, den **26.11.2026** spricht um **14 Uhr** im Raum **C4H33 und über Zoom**

Till Falkenhagen
(Universität Tübingen)

über das Thema

Uniqueness proofs and bounded null geodesics in the Majumdar—Papapetrou spacetimes

« I present my current findings of my master thesis about uniqueness proofs and bounded null geodesics in the Majumdar—Papapetrou (MP) spacetimes and how they arise.
Specifically, we first take a look at the MP spacetimes themselves and then go over the uniqueness proof provided by James Lucietti in 2021, which classifies these. We then take a look at different types of photon surfaces and their existence in the MP spacetimes and briefly explain their relevance in uniqueness proofs. Static photon surfaces in the Euclidean MP spacetimes in particular have some very interesting behavior regarding their existence. I will go over a possible uniqueness proof that is a generalization of Lucietti's theorem that I am still working on filling the details in, using methods of uniqueness proofs with photon surfaces as part of the boundary.
In the second part, we take a look at bounded null geodesics in the MP spacetimes, though mostly just closed geodesics. In a rather reductive special case we can connect these closed geodesics to the first fundamental group and show existence and uniqueness in each free homotopy class. We explore a strategy of distinguishing between different symmetric closed geodesics which allows for a simple algorithm finding these. I will also go over a few other interesting remarks regarding this case. »

Den Zoom-Link erhalten Sie per E-Mail von Abir Seghirate

For participating online, please sign up by sending an email to Abir Seghirate.

Hierzu wird herzlich eingeladen.

Carla Cederbaum, Gerhard Huisken, zusammen mit Jan Metzger (Potsdam)