EBERHARD KARLS
UNIVERSITÄT
TÜBINGEN

Mathematisch-
Naturwissenschaftliche
Fakultät

Fachbereich Mathematik
AB Geometrische Analysis,
Differentialgeometrie und
Relativitätstheorie

Oberseminar
Geometrische Analysis, Differentialgeometrie und Relativitätstheorie

Am Donnerstag, den **27.11.2025** spricht um **14 Uhr s.t.** im Raum **D7H41 und über Zoom**

Simone Coli

(Universität Tübingen)

über das Thema

On the Perturbation of Photon Surfaces

It is well known that many static, spherically symmetric space-times admit a photon sphere, with the Schwarzschild solution serving as the canonical example. The notion of a photon sphere can be generalized to that of a photon surface, in the sense of Claudel–Virbhadra–Ellis. The uniqueness of static space-times containing an equipotential photon surface has been rigorously established, in both vacuum and electro-vacuum cases, in works by C. Cederbaum and G. Galloway and by C. Cederbaum, S. Jahns, and O. Vicanek Martinez. Furthermore, the uniqueness of space-times containing a photon sphere has been studied under non-spherical perturbations of the Schwarzschild metric, under the assumption of a constant lapse function and allowing for simultaneous deformations of the spatial geometry and of the photon sphere's location, in work by H. Yoshino. Building upon these results, we investigate the stability and deformation of photon surfaces when the lapse function is no longer assumed to be constant, and we study the behaviour of photon surfaces in the Schwarzschild space-time under small non-spherical perturbations of the full static data.

Den Zoom-Link erhalten Sie per E-Mail von Martina Neu.

For participating online, please sign up by sending an email to Martina Neu.

Hierzu wird herzlich eingeladen.

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