



**Oberseminar
Geometrische Analysis, Differentialgeometrie und Relativitätstheorie**

Am **Mittwoch**, den **17.06.2026** sprechen um **14 Uhr** im Raum S10 (C6H10) und über **Zoom**

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über das Thema

The Extrinsic Curvature of an AE IDS and (its lack of) Parity

We are interested in the understanding and classification of the asymptotic structure of asymptotically Euclidean initial data sets which are considered to be appropriate models of time slices inside isolated gravitational systems in general relativity. More specifically, we want to investigate the asymptotic behaviour of the extrinsic curvature under geometric decay conditions on the metric and the mean curvature as well as standard decay of the matter densities, and its implication for the conserved quantities of the system. For this sake we apply the York decomposition on the extrinsic curvature. We find a precise asymptotic expansion of its longitudinal part, also implying improved decay on this part. At the same time, we conclude that its transverse tracefree part can not be controlled. We see this through an explicit construction of a trace- and divergence free tensor with respect to the Euclidean metric of arbitrary decay. Through the conformal method, this yields an infinite-dimensional class of initial data sets with geometric decay conditions where the extrinsic curvature exhibits arbitrary asymptotic behaviour, in particular no parity, even with well-defined ADM angular momentum.

This is joint work with Rodrigo Avalos and David Maxwell.

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)