

## GR 2: Schwarze Löcher 1

Zeit: Montag 10:40–11:00

Raum: JUR K

GR 2.1 Mo 10:40 JUR K

**Generalized Weyl solutions in five-dimensional Einstein-Gauss-Bonnet theory: the static black ring** — ●BURKHARD KLEIHAUS, JUTTA KUNZ, and EUGEN RADU — Universität Oldenburg

We argue that the Weyl coordinates and the rod-structure employed to construct static axisymmetric solutions in higher dimensional Einstein gravity can be generalized to the Einstein-Gauss-Bonnet theory. As a concrete application of the general formalism, we present numerical evidence for the existence of static black ring solutions in

Einstein-Gauss-Bonnet theory in five spacetime dimensions. They approach asymptotically the Minkowski background and are supported against collapse by a conical singularity in the form of a disk. An interesting feature of these solutions is that the Gauss-Bonnet term reduces the conical excess of the static black rings. Analogous to the Einstein-Gauss-Bonnet black strings, for a given mass the static black rings exist up to a maximal value of the Gauss-Bonnet coupling constant  $\alpha'$ . Moreover, in the limit of large ring radius, the suitably rescaled black ring maximal value of  $\alpha'$  and the black string maximal value of  $\alpha'$  agree.