GR 17: Black Holes II

Time: Wednesday 16:30–17:30　　　　　　　　　　　　　　　　　　　Location: SPA SR220

GR 17.1　Wed 16:30　SPA SR220

Orbits in rotating dyonic extremal Kaluza-Klein black hole spacetimes — Valeria Diemer, •Matthias Kruse, and Jutta Kunz — University of Oldenburg

The analytic solution of the geodesic equation obtained in rotating dyonic extremal Kaluza-Klein black hole spacetimes is presented. The possible orbits for massive and massless test particles in these spacetimes are investigated and classified. The equations of motion are solved analytically by means of elliptic functions, leading to an exact description of the orbits.

GR 17.2　Wed 16:50　SPA SR220

Shadows and Photon Regions of Black Holes — •Arne Grenzebach, Claus Lämmerzahl, and Volker Perlick — ZARM, Universität Bremen, 28359 Bremen

I my talk I start with a short general definition of the concept of the *shadow* of black holes and describe how the shadow of a Kerr-Newman-NUT black hole with a cosmological constant can be determined. Here, the crucial point is the existence of (unstable) spherical light rays in a region $\mathcal{K}$ which determine the boundary of the shadow. This region $\mathcal{K}$ shrinks to the well known photon sphere in the Reissner-Nordström case. After transformation to celestial coordinates on the observer's sky, the shadow can be viewed via stereographic projection.

GR 17.3　Wed 17:10　SPA SR220

Dilatonic Black Saturn — •Saskia Grunau and Jutta Kunz — Universität Oldenburg

We construct the charged rotating black saturn in Einstein-Maxwell-dilaton theory in five dimensions. The black saturn solution of El-vang and Figueras is embedded in six dimensions and boosted with respect to the time coordinate and the added sixth dimension. Then the charged solution is obtained by a Kaluza-Klein reduction.

If the parameters of the solution satisfy certain conditions, the dilatonic black saturn is in mechanical and thermodynamical equilibrium at the same time.

We study the influence of the dilaton on the black saturn spacetime by analysing the physical properties and the phase diagram.