
GR 201: Hauptvorträge Dienstag

Zeit: Dienstag 9:00–10:30

Raum: INF 308 Kl. HS

Hauptvortrag GR 201.1 Di 9:00 INF 308 Kl. HS
Vacuum gravitational collapse in higher dimensions — ●PIOTR BIZON — Institute of Physics, Jagiellonian University, Krakow, Poland

Our current mathematical understanding of the dynamics of gravitational collapse to a black hole is limited to the spherically symmetric situation and, in fact, even in this case much remains to be learned. The reason is that Einstein's equations become tractable only if they are reduced to a 1+1 dimensional system of partial differential equations. Due to this technical obstacle, very little is known about the collapse of pure gravitational waves because by Birkhoff's theorem there is no spherical collapse in vacuum.

In my talk I will describe recent joint work with T. Chmaj, B. Schmidt and G. Gibbons on the new cohomogeneity-two symmetry reduction of the vacuum Einstein equations in five and higher odd dimensions which evades Birkhoff's theorem and admits time depen-

dent asymptotically flat solutions. I will show that this model provides an attractive 1+1 dimensional geometric setting for investigating the dynamics of gravitational collapse in vacuum.

Hauptvortrag GR 201.2 Di 9:45 INF 308 Kl. HS
The status of numerical relativity following the recent breakthroughs — ●ULRICH SPERHAKE — FSU Jena, Germany

This talk provides a review of the recent breakthroughs in numerical relativity, in particular related to the binary black hole problem. The reliability and accuracy of the resulting simulations is addressed with special emphasis on their suitability for the ongoing effort to detect gravitational waves. We further discuss the impact of the latest results on astrophysically important scenarios such as the recoil or spin-realignment of coalescing black holes.