

GR 17: Grundlegende Probleme I

Zeit: Freitag 11:15–11:45

Raum: HS 6

GR 17.1 Fr 11:15 HS 6

Gravitational Quadrupole Contributions to the Equations of Motion of Compact Objects — •JAN STEINHOF — CENTRA, Instituto Superior Técnico, Avenida Rovisco Pais 1, 1049-001 Lisboa, Portugal

Compact objects in general relativity approximately move along geodesics of spacetime. Corrections due to spin (dipole), quadrupole, and higher multipoles were derived, e.g., by Mathisson, Papapetrou, and Dixon long ago. We discuss how Dixon's quadrupole can be related to astrophysical objects like neutron stars or black holes. In particular, we investigate quadrupole deformation due to spin and tidal interactions. Further, an inclusion of oscillation modes of the object via the

quadrupole is considered. For this purpose the Newtonian case is reviewed and formulated in a novel manner. Problems for an extension to the general relativistic case and a tentative solution are discussed.

GR 17.2 Fr 11:30 HS 6

Covariant equations of motion for test bodies in nonminimal coupling theories — •DIRK PUETZFELD — ZARM, Universitaet Bremen

We present covariant equations of motion for a wide class of gravitational theories with nonminimal coupling. Our findings generalize and correct previous results in the literature and allow for a systematic test of such theories by means of multipolar test bodies.