
GR 3: Hauptvorträge Dienstag

Zeit: Dienstag 9:00–10:30

Raum: KGI-HS 1010

Hauptvortrag GR 3.1 Di 9:00 KGI-HS 1010
Lunar Laser Ranging - A Testbed for General Relativity
— •JÜRGEN MÜLLER — Institut für Erdmessung, Leibniz Universität Hannover, Germany

Lunar Laser Ranging (LLR) has routinely provided observations for more than 37 years. A new site called APOLLO has just started with measurements reaching mm ranging accuracy. The main benefit of LLR is, e.g., to determine many parameters of the Earth-Moon dynamics (e.g. orbit and rotation of the Moon, a selenocentric reference frame or the secular increase of the Earth-Moon distance: 3.8 cm/year) and to test metric theories of gravity. LLR data analysis determines gravitational physics quantities such as the equivalence principle, any time variation of the gravitational constant, relativistic precessions, and several metric parameters. The gravitational physics parameters cause different spectral perturbations of the lunar orbit, which can be

used to separate the various relativistic and Newtonian effects with high accuracy. We give an overview of the recent status of our LLR analysis procedure, present new results for the relativity parameters, and address potential capabilities of LLR in the near future.

Hauptvortrag GR 3.2 Di 9:45 KGI-HS 1010
New developments in the Hamiltonian treatment of spinning objects in general relativity — •GERHARD SCHÄFER — Theoretisch-Physikalisches Institut, Friedrich-Schiller-Universität Jena
The talk reviews recent achievements in the analytical treatment of pole-dipole particles in general relativity based on canonical variables. Various higher order post-Newtonian Hamiltonians with spin are presented. The global Poincaré algebra will be constructed on the post-Newtonian orders in question. The local stress-energy-tensor algebra will be given attention too.