

GR 16: Grundlegende Probleme

Zeit: Donnerstag 18:45–19:25

Raum: ZHG 002

GR 16.1 Do 18:45 ZHG 002

On supplementary conditions in general relativistic multipolar approximation schemes — ●DIRK PUETZFELD — ZARM, Universitaet Bremen

Multipolar approximation techniques play an important role in the description of the motion of extended bodies in General Relativity. All currently known approximation schemes require the specification of a so-called “supplementary condition” beyond the lowest multipolar order. In this talk we review the most common supplementary conditions. In particular, we focus on their interpretation in the context of different multipolar approximation schemes, as well as the conceptual problems which arise with their introduction.

GR 16.2 Do 19:05 ZHG 002

The Origin of Gravity - by Lorentzian Relativity — ●ALBRECHT GIESE — Taxusweg 15, 22605 Hamburg

Einstein based his theory of relativity on so-called ‘principles’. These are assumed to be basic rules of nature which cannot be traced back to more fundamental facts. - However, it can be shown that Einstein’s

principles can in fact either be traced back further (accompanied by a better understanding of physics in general), or have in the meantime been falsified.

One of Einstein’s fundamental principles is the constancy of the speed of light ‘ c ’. The logical conflicts with geometry or with observations in gravitational fields that follow from this are dealt with by assuming curved 4-dimensional space-time which even looks different to different observers.

By adopting the fundamental assumption of H. Lorentz that relativistic phenomena are not a consequence of new principles but can be deduced from known physical processes, we can find an easier way to explain relativity including gravity, while at the same time giving us a better understanding of other areas of physics such as field theory and particles. General relativity turns out to be workable at a school level with similar results to those of Einstein, but avoiding the logical paradoxes inherent in Einstein’s approach.

We also find answers to the great open problems of present-day physics such as Dark Energy, Dark Matter, and Quantum Gravity.

Further information: www.ag-physics.org/gravity