

*Im Rahmen des Projektseminars*

**Besprechung neuerer Arbeiten  
aus Angewandter Physik  
LVA Nr. 374.008**

*spricht*

**Manuel Mair**

*über*

**Lunar Laser Ranging**

Abstract:

Lunar laser ranging has provided many of the best tests of gravitation since the first Apollo astronauts landed on the Moon. The march to higher precision continues to this day, now entering the millimeter regime, and promising continued improvement in scientific results. This review introduces key aspects of the technique, details the motivations, observables, and results for a variety of science objectives, summarizes the current state of the art, highlights new developments in the field, describes the modeling challenges, and looks to the future of the enterprise. The lunar laser ranging experiment provides precise observations of the lunar orbit that contribute to a wide range of science investigations. In particular, time series of highly accurate measurements of the distance between the Earth and Moon provide unique information that determine whether, in accordance with the equivalence principle, both of these celestial bodies are accelerating toward the Sun at the same rate, despite their different masses, compositions, and gravitational self-energies. Analyses of precise laser ranges to the Moon continue to provide increasingly stringent limits on any violation of the EP. Additional high accuracy ranges and improvements in the LLR data analysis model will further advance the research of relativistic gravity in the solar system, and will continue to provide highly accurate tests of the EP. [1] This presentation gives an overview of the Lunar Laser Ranging experiment, an overview of ground observatories and the technical background. Additionally recent results are demonstrated and further applications will be discussed.

[1] James G Williams, Slava G Turyshev and Dale H Boggs, "Lunar laser ranging tests of the equivalence principle". Classical and Quantum Gravity, Volume 29, Number 18. 15 August 2012

Zoom-Meeting beitreten

<https://jku.zoom.us/j/99130077914?pwd=d2pCVkxBSmp1Vnp0QkpVcldaWGVVQT09>

Meeting-ID: [991 3007 7914](#)

Passwort: 132196

**Datum: Fr, 12.02.2021**

**Zeit: 13:45 Uhr**

**Ort: ZOOM-meeting**