

# Test stand for LISA laser phase fidelity

Michael Born<sup>1</sup>, Melanie Ast<sup>1</sup>

<sup>1</sup>) Max-Planck-Institut für Gravitationsphysik (Albert-Einstein-Institut),  
Callinstraße 38, 30167 Hannover, Germany

Lasers for gravitational wave detectors have stringent requirements to fulfil. For example, amplitude and frequency noise have to be below certain demanding limits. The lasers for the LISA gravitational space mission will have additional 2.4 GHz sidebands that allow data transfer and rough ranging between the spacecrafts. To reach the proposed length measurement precision of  $10 \text{ pm}/\sqrt{\text{Hz}}$  in post processing the clock noise between the spacecrafts needs to be known. Therefore, the LISA lasers imprint the clock tone on the phase of the sidebands with an electro-optic modulator. In this presentation we will show the design and current performance of the test stand to verify the phase stability between the 1064 nm carrier and the sidebands of LISA lasers.