TG Space Laser Gravimetry Overview

TG Leader

Vitali Müller

TG Activities

- Study and develop novel concepts for inertial sensing and inter-satellite ranging using laser interferometry in order to improve measurements of Earth’s gravity field
  - Optical accelerometers and gradiometers
  - Alternative optical layouts for laser ranging systems
- Investigate new measurement channels that contain gravity field information based on
  - Clocks
  - Centrifugal acceleration sensing
- Experimental demonstration of optical accelerometers and inter-satellite ranging interferometers for future geodesy missions
  - Torsion balance facility
- Data analysis for the Laser Ranging Interferometer on GRACE Follow-On
  - Processing of ranging data with sub-nanometer precision level

TG Competences/Services

- Space missions & payloads
- Laser interferometry
- Torsion balance facility
- Data analysis

Involved QF Members

<table>
<thead>
<tr>
<th>Members</th>
<th>Institution</th>
<th>Relevant Expertise</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vitali Müller, Leader</td>
<td>AEI</td>
<td>Laser Gravimetry</td>
</tr>
<tr>
<td>Gerhard Heinzel</td>
<td>AEI</td>
<td>Laser Gravimetry, Optical Simulations</td>
</tr>
<tr>
<td>Jürgen Müller</td>
<td>LUH</td>
<td>Relativistic Geodesy; LLR Relativity Test; Application of Quantum Gravimetry</td>
</tr>
<tr>
<td>Dietmar Kracht</td>
<td>LZH</td>
<td>Advanced Light Sources; Precision Additive Manufacturing of Quantum Sensors; High power solid-state single frequency amplifiers</td>
</tr>
</tbody>
</table>