

TG Space Laser Gravimetry Overview

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| TG Leader | Vitali Müller |
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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

| Members | Institution | Relevant Expertise |
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| Vitali Müller (Leader) | AEI/LUH | Laser Interferometer modelling; LRI on GRACE-FO and for NGGM; Data Analysis |
| Gerhard Heinzl | AEI/LUH | Space Laser Interferometry |
| Dietmar Kracht | LZH | Advanced Light Sources; Precision Additive Manufacturing of Quantum Sensors; High power solid-state single frequency amplifiers |
| Jürgen Müller | LUH | Relativistic Geodesy; LLR Relativity Test; Application of Quantum Gravimetry |
| Esteban Delgado | AEI/LUH | System engineering and test engineering |
| Miguel Dovale | AEI/LUH | DFM, Prism-Optical Head modeling, optical readout design and testbed development |
| Christoph Vorndamme | AEI/LUH | DFM, readout and control electronics |
| German Fernandez Barranco | AEI/LUH | Photoreceiver |

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| Kohei Yamamoto | AEI/LUH | DFM, optical simulation, readout electronics and control electronics |
| Moritz Mehmet | AEI/LUH | Torsion Balance |
| Gerald Bergmann | AEI/LUH | Readout of Torsion Balance, Seismic Noise |
| Victor Huarcaya | AEI/LUH | Testbed development (Torsion Balance) |
| Guy Appelbaum | AEI/LUH | Testbed development (Torsion Balance) |
| Hao Yan | AEI/LUH | EI.Static Sensor/Actuation, Torsion Balance noise budget |
| Malte Misfeldt | AEI/LUH | Data analysis for GRACE-FO LRI |
| Laura Müller | AEI/LUH | Data analysis for GRACE-FO LRI |
| Henry Wegener | AEI/LUH | Data analysis for GRACE-FO LRI, Tilt-To-Length Coupling |
| Karsten Danzmann | AEI/LUH | LISA, Gravitational Wave Astronomy |
| Annike Knabe | LUH | Attitude Control |
| Hu Wu | LUH | Novel measurement concepts, Clocks |
| Alireza HosseiniArani | LUH | Hybrid Accelerometers incl. Atom Interferometry |
| Matthias Weigelt | LUH | Application of Gravity Data |
| Alexander Koch | DLR-SI | Laser Ranging Interferometers, Link Acquisition |
| Manuel Schilling | DLR-SI | Novel Measurement Concepts |
| Meike List | DLR-SI | Space Mission Simulator |
| Peter Wessels | LZH | Laser Development |
| Benny Rievers | ZARM | Space Mission Simulator |
| Jens Grosse | ZARM | Laser Links |
| Florian Wöske | ZARM | XHPS Space Mission Simulator |