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Advancing intersatellite laser interferometry for geodesy applications

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In the summer of 2019 the Deutsches Zentrum für Luft- und Raumfahrt (German Aerospace Center) Institute for Satellite Geodesy and Inertial Sensing (DLR-SI) was founded. This new institute is located in Hannover with one group in Bremen. It benefits from strong ties to different institutes from the Leibniz University in Hannover (Institute for Quantum Optics, Institute of Geodesy, Institute for Gravitational Physics), the Center of Applied Space Technology and Microgravity (ZARM) in Bremen and the National Metrology Institute (PTB) in Brunswick.

In this talk I will give an overview of the focus of the working group for Laser Interferometric Sensing. The overarching goal of our group is the technology development for laser interferometric satellite geodesy missions, like a possible Next Generation Gravity Mission (NGGM). Due to the technological overlap, collaboration with the LISA community is also possible. Specifically, the currently planned work packages include, but are not limited to the development of novel optical bench topologies for laser interferometric ranging instruments for geodesy missions and the design of low noise photoreceivers and laser link acquisition sensors. Furthermore, interferometric readout of monolithic accelerometers will be studied and flight data from the GRACE Follow-On Laser Ranging Interferometer (LRI) will be evaluated within our group. In my talk I will give an overview of these planned work packages and will point out the expected benefit of these novel technologies to the geodesy community.