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## Laser Ranging Interferometry for the next gravity missions

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The Laser Ranging Interferometer (LRI) on board the GRACE Follow-On spacecraft has successfully demonstrated for the first time interferometric laser ranging between satellites with a noise level below 1 nm/rtHz. In addition, the LRI's steering mirror information provides attitude information that enable inter-comparisons with the conventional star cameras. Two new twin-satellite missions are now under development: the Next Generation Gravity Mission (NGGM) by ESA and the GRACE-C mission by a US-German partnership. Both missions rely on laser interferometry as the primary and only means of measuring the distance variations between the spacecraft.

In this presentation, we introduce the measurement concept and design principles, report on the current status of the ranging instruments and explain the changes to be implemented with respect to GRACE-FO, mainly related to redundancy and lessons learned.