

Abstract Submitted
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A demonstration of arm-locking for LISA using the GRACE-FO Laser Ranging Instrument IRA THORPE, NASA/GSFC, KIRK MCKENZIE, ANDREW SUTTON, NASA Jet Propulsion Laboratory — The mitigation of laser frequency noise is a key challenge for the design of space-based interferometric gravitational wave detectors such as the Laser Interferometer Space Antenna (LISA) and its derivatives. Arm locking is novel technique of stabilizing the laser frequency using the LISA arms that has been studied through simulations and in the laboratory. The Laser Ranging Instrument (LRI) on the upcoming GRACE-FO geodesy mission provides an opportunity to perform an on-orbit demonstration of arm-locking in a configuration that is representative of LISA in many aspects. In this talk, I will describe a potential arm-locking experiment for GRACE-FO and present preliminary results from time-domain simulations being used to refine the proposed experiment design.

James Thorpe
NASA/GSFC

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