Abstract Submitted
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The Development of the Telescope Test Structure for LISA Telescope Stability Measurements[1] SOHAM KULKARNI, ADA UMINSKA, JOSE SANJUAN, JOSEPH GLEASON, PAUL FULDA, GUIDO MUELLER, University of Florida — The LISA telescope is a critical part of the science interferometer and is subject to the $1\text{pm}/\sqrt{\text{Hz}}$ in-band length stability requirement and the long term length stability requirement of 1 um over mission durations. These tests will be conducted by building an ultra-stable optical cavity, the Telescope Test Structure (TTS), around it. The TTS design must be accommodating of the $\sim$84 cm long telescope, the internal and external alignment tolerances with the telescope and the manufacturing limitations while meeting the stringent requirements. Here we report the stability of scaled down, ULE based design for the TTS that meets the LISA requirement with a comfortable margin. Additionally, we also report stability results for a metal-ULE hybrid design which has more adaptability and allows faster turn-around times for design changes while meeting the LISA requirement.

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