

Abstract Submitted
for the APR17 Meeting of
The American Physical Society

High Stability Low Scatter Telescope for a Space-based Gravitational Wave Observatory¹ JEFFREY LIVAS, NASA/GSFC, SHANNON SANKAR, NASA/GSFC/CRESST/USRA — A laser interferometer space-based gravitational wave observatory requires an optical telescope to efficiently transfer laser light between pairs of widely-separated spacecraft. The application is precision interferometric metrology, and therefore requires the telescope to have high optical pathlength stability, and low scattered light performance. We discuss the expected on-orbit environment and present the latest design, including materials choice trades, surface roughness and cleanliness requirements, and an optical prescription optimized to reduce scattered light. We will also discuss some of the remaining system-level trades.

¹This work is supported by NASA Strategic Astrophysics Technology grant 14-SAT14-0014

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Date submitted: 30 Sep 2016

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