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Testbed for LISA photodetectors FELIPE GUZMAN, JEFFREY LIVAS, ROBERT SILVERBERG, NASA Goddard Space Flight Center — The Laser Interferometer Space Antenna (LISA) is a gravitational wave observatory consisting of three spacecraft separated by 5 million km in an equilateral triangle whose center follows the Earth in orbit around the Sun but offset in orbital phase by 20 degrees. LISA is designed to observe sources in the frequency range of 0.1 mHz–100 mHz by measuring fluctuations of the inter-spacecraft separation with laser interferometry. Quadrant photodetectors are used to measure both separation and angular orientation. Noise level, phase and amplitude inhomogeneities of the semiconductor response, and channel cross-talk between quadrant cells need to be assessed in order to ensure the $10\,\mathrm{pm}/\sqrt{\mathrm{Hz}}$ sensitivity required for the interferometric length measurement in LISA. To this end, we are currently developing a testbed that allows us to evaluate photodetectors to the sensitivity levels required for LISA. A detailed description of the testbed and prelimary results will be presented.

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