Abstract Submitted
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Laser Communication for LISA KENDALL ACKLEY, DYLAN SWEENEY, GUIDO MUELLER, University of Florida — The Laser Interferometer Space Antenna (LISA) is a joint mission between NASA and ESA to detect gravitational wave radiation between 0.1 and 1 Hz by measuring phase fluctuations of laser heterodyne signals. The phase of the signals must be measured to microradian accuracy. For LISA to be successful the distance between the spacecraft (SC) must be measured to meter precision and the clock signals on each SC must be recorded. These functions will be accomplished using the laser links between the SC. Pseudo random noise (PRN) codes will be modulated onto the light and used to measure the light travel delay between the SC. The clock signals on each SC will be frequency up-converted to GHz frequencies, modulated onto the laser links, and sent to the other SC where it will be recorded and used in post-processing to cancel the clock noise. We have tested components of these systems such as frequency up-converters, electro-optic modulators, and photodetectors, as well as the systems themselves to see if they are capable of meeting their performance requirements for LISA. We will discuss the work being completed at UF. This work is supported by NASA Grant NNX09AF99G.

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