



Characterisation of an actuator for LISA fibre output coupling

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An actuator with appropriate accuracy, precision and stability is needed for positioning of optical fibres for the Laser Interferometer Space Antenna (LISA) mission, to search for gravitational waves. The actuator under consideration is the Burleigh Inchworm, which was selected on the basis of technical requirements derived from LISA specifications. A Michelson interferometer system will be used to determine the temporal and thermal stability of the actuator in the milliHertz frequency range required for LISA. A mirror is mounted onto the actuator stage which forms one arm of the interferometer. This beam is recombined with a path-length-matched reference arm, and actuator position is sensed by measuring the interferometer fringe output with a photodiode. The photodiode output is digitised and processed using PC software to yield actuator position. This presentation will describe the experimental set up and preliminary results from the interferometer system.