

SPACE SYSTEMS SYMPOSIUM (D1)
Enabling Technologies for Space Systems (2)

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AUTOMATED SENSOR NETWORK VERIFICATION LINEARITY IN A SEGMENTED REFLECTOR
TESTBED**Abstract**

A segmented reflector telescope within a large flexible space structure demands a high degree of precision and accuracy in order to maintain a parabolic shape with the purpose of acquiring clear images. In designing a control of a large complex system that has multiple-input-multiple-output (MIMO) characteristics, requires a regular check of the sensor's calibration in order to detect any deviation from the linear operating range of the sensors. The segmented space telescope prototype located at the Structures, Propulsion, And Control Engineering (SPACE) NASA sponsored University Research Center (URC) at California State University, Los Angeles, is fabricated with a segmented primary mirror and a network of 42 inductive position sensors. The development of an autonomous and rapid method of verifying the calibration of the sensors linearity is essential to isolate the sensors that are out of calibration. Multiple sensors linearity calibration verification is achieved through utilizing the H-infinity controller, developed to perform figure maintenance of the testbed mirror panels in conjunction with a GUI that will serve as a tool to verify the linearity of the sensors.