

Abstract Submitted
for the APR14 Meeting of
The American Physical Society

Cryogenic behavior of LEDs for use in third generation LIGO position sensors and actuators¹ RYAN GOETZ, DAVID TANNER, GUIDO MUELLER, University of Florida, UF LIGO TEAM — The sensitivity of Advanced LIGO, the second-generation among ground-based, long-baseline interferometric gravitational-wave detectors, is expected to be limited by thermal noise of test-mass optical coatings within the frequency band of interest. To reduce the effects of thermal noise, and thereby increase the sensitivity of LIGO interferometers, the third generation of LIGO detectors will likely be operated with some optical and control components at cryogenic temperatures. In the interest of developing and investigating LIGO subsystems at low temperatures, the University of Florida LIGO Group has constructed a testbed for table-top cryogenic experiments. This presentation focuses on a preliminary investigation into cryogenic Birmingham Optical Sensors and Electro-Magnetic actuators (BOSEMS). BOSEMS are shadow sensors which are used to sense the position of and actuate on the LIGO core optics. Specifically, the low temperature I-V performance and efficiency of LEDs used in BOSEMS will be presented.

¹Supported by NSF grant PHY-1205512.

Ryan Goetz
University of Florida

Date submitted: 10 Jan 2014

Electronic form version 1.4