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**Dynamic Response and Locking of Optical Resonators for LIGO** SERGIO H. CANTU, LILIANA RUIZ-DIAZ, ALAN FARRELL, MALIK RAKHMANOV, University of Texas at Brownsville — The Laser Interferometer Gravitational Wave Observatory (LIGO) is a large-scale detector capable of direct observation of gravitational waves from various astrophysical sources. The detector utilizes a highly stabilized laser beam which requires a high-purity mode content. The spatial filtering (modecleaning) of the laser beam is done by a triangular ring resonator (Fabry-Perot cavity), which is made of a monolithic fused-silica spacer and low-loss mirrors bonded to it with precision alignment. We fabricated and characterized 3 such ring resonators at the LIGO Hanford Observatory. Several measurement techniques have been applied to measure the optical losses in these resonators. In this poster we present the results of these measurements and provide physical explanation of the resonator filtering properties.

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