Abstract Submitted
for the APR12 Meeting of
The American Physical Society

Helping to improve gravitational wave searches with the Critical Coupling Likelihood Technique CRISTINA TORRES, University of Texas at Brownsville / LIGO Livingston Observatory, CESAR COSTA, INPE / Lousiana State University — As part of LIGO's search for gravitational waves (GW) we find ourselves trying to determine if unwanted or unknown sources of noise are coupling into the output of current interferometric GW detectors. To aid in this challenge of understanding instrumental noise sources, we have continued our development of the Critical Coupling Likelihood (CCL) method. The goal of CCL is to offer semi-autonomous quantitative inspection of an instrument's data quality for each individual detector involved in identifying a potential GW signal. We will discuss some early results observed when applying CCL to a small sample of LIGO data from the end of the sixth science run. In addition to these early promising results we would like to show our preliminary attempts to do more with CCL than identify noise in archived data but to understand the noise components present in a GW in close to real time. Simple tests to do just that have been done with on-line detectors. CCL was used to try and identify both known noise sources and seek out new detector noise sources. In addition to identifying instances of noise coupling the CCL method can be used to construct simple empirically derived pseudo-transfer function like mappings to identify the physical mechanisms in which noise affects a GW detector.

Cristina Torres
University of Texas at Brownsville / LIGO Livingston Observatory

Date submitted: 25 Jan 2012 Electronic form version 1.4