

LSC Six Month Progress Report

Organization: Relativity and Astrophysics Group of Louisiana Tech University

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Attachment A: Detector Characterization and LIGO I Data Analysis

a) Preparation of a new monitor, based on one developed by the US Geological Survey

The C files of the core algorithm were checked and edited as necessary to work with LIGO frames and conventions.

New filters were developed using Matlab, that worked better with the decimation rates appropriate for LIGO data, while preserving the characteristics of a sharp cutoff below 1 Hz with minimal distortion above that frequency.

DMT compliant C++ monitor code was written to wrap the C code. The new monitor, PTmon, was tested carefully, using half an hour of data from E7 that had been inspected visually, and also on real-time data, and tuned to catch the glitches that were visually obvious. Results were written to a log file.

Some work remains to be completed. Returning the results from the C code to the C++ code was something that required help from John Zweizig, and the trigger-writing code still has to be tested. Documentation in html, a 'revolving' web page, a trend file and control room display, and visual display of glitches found have not been done yet .

b) Adaptation of algorithm for laser channels

Adapting the monitor for laser channels requires that the peak-trough (or peak-to-peak) series be filtered after it is formed, because of beating in the original signals due to resonances in the small optics. This is particularly pronounced in the mode cleaner channels, but can be present through to AS_Q. Code has been written to interpolate to obtain an evenly spaced time series that can be refiltered, but this has not yet been tested.