

LSC Six-Month Progress Report

LIGO-M000152-00-M

Organization Cornell University Relativity Group

Report Date 02/15/2000

Attachment A - LIGO I

Participation Eanna Flanagan - 100%
Wolfgang Tichy - 100%
Steve Drasco - 100%

Item - Task 9 - a

a.1 Robust Algorithms

Steve Drasco has been working with the UTB group in writing the LAL software for the standard cross-correlation code. Drasco's coding contributions can be found at the web site [http://baba.tn.cornell.edu/lal\(id:stochastic,password:background\)](http://baba.tn.cornell.edu/lal(id:stochastic,password:background)). We will continue to collaborate with the UTB group in completing the code for the standard cross-correlation algorithm. The code for the robust technique has not yet been written, but the robust technique will involve only a small amount of changes from the code for the standard technique.

The paper deriving the robust search method is currently being revised by the UWM group.

a.2 Non-Gaussian Stochastic Background

Steve Drasco is in the process of deriving the optimal data analysis method when the stochastic background is non-Gaussian. As a first model problem, he is considering the case where the timescale of each individual event is shorter than the sampling time of the detector. This case is not realistic but will provide a foundation for tackling the more realistic problem. Drasco has made substantial progress in this simple model and will write a short paper giving the details of the analysis and the resulting data analysis method.

Item - Task 9 - b

b.1 Excess Power Search Method

Flanagan has improved and refined the original algorithm and has coded the search method according to the LAL conventions. This code has been supplied to the LAL software coordinator Jolien Creighton, and is available at the web site <http://baba.tn.cornell.edu/lal/> (id: stochastic, password: background). The code has been tested with simulated Gaussian noise and the method works very well. The code has not yet been run on data from the Caltech 40-meter prototype; this work is in progress. The paper with Patrick Brady, Warren Anderson and Jolien Creighton has been substantially revised. The current draft is not yet submitted but will be submitted within the next few weeks. It is available at the website <http://www.lsc-group.phys.uwm.edu/~patrick/downloads/epDraft.pdf>

b.2 Review of Other Blind Search Methods

No progress to report on this topic.

Item - Task 9 – c

A paper on exploration of methods to increase accuracy of Post-Newtonian templates has been completed and accepted for publication in Phys. Rev. D. It is scheduled to appear in the 15 May 2000 issue. The paper is also available at the Los Alamos bulletin board <http://xxx.lanl.gov> as gr-qc/9912075.

Item - Task 9 - d

The draft of the first paper giving the foundational theory underlying analyses of light scattering is almost complete.

Item - Task N/A. Other issues - Computing Hardware Resources

We have acquired a new Dell PC with a substantial amount of disk space which will be dedicated to LSC research, and which is running under Red Hat Linux 6.1.