

LSC Six-Month Progress Report

LIGO-M000292-00-M

Organization Carleton College Relativity Group (CCRG)

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Time was spent on developing both Mathematica and MATLAB code for generating fictitious binary gravity wave signals. The signals (2.5 post-Newtonian order) are dependent (of course) on the astrophysical parameters, detector orientation and location. The signals are then added to the interferometer noise signal, which is generated with the MATLAB noise toolbox developed by, among others, Finn and Daw. MATLAB toolboxes were used to do signal processing in time and frequency regimes. In parallel with this the CCRG group was currently programming (in C) the Markov chain Monte Carlo routine. This is almost, but not yet complete. Part of the complexity is dealing with large data sets, but that is not too bad. First results from the MCMC runs may appear before the Hanford meeting, with the plan to make a complete presentation at the Gravity Wave Data Analysis meeting at Livingston this fall.

Christensen and a student have commenced work on using higher order statistics, namely bicoherence, as a tool for noise identification. The plan is to continue and extend the work of Denis Petrovic and Albert Lazzarini, and to exchange thoughts and ideas with Julien Sylvestre (MIT) and Steve Penn (Syracuse) who are also working on bicoherence.

So far the CCRG group has basically been tooling up for this project; getting access to the data, reading it, and getting the MATLAB toolboxes operating on our pcs and Sun workstations.

Christensen's NSF proposal was funded, although official paperwork is still pending. This will affect the CCRG's computing ability, and with money awarded a computing environment that will be more compatible with LIGO's can be established .