

**Attachment Number 1 to the
Memorandum of Understanding (LIGO-M950088-00-M)
between the
Center for Gravitational Physics and Geometry(CGPG) of the
Pennsylvania State University
and the
Laser Interferometer Gravitational Wave Observatory (LIGO) Project
August 1, 1995**

This Attachment to the Memorandum of Understanding LIGO-L950044-0-M describes the activities of Curt Cutler of the Center for Gravitational Physics and Geometry(CGPG) of the Pennsylvania State University.

Professor Cutler proposes to undertake research on gravitational waves from coalescing compact binaries. Such binaries are currently thought to be the best candidate source for the LIGO detectors. There are several possible astrophysical applications of such detections; however their feasibility depends on how accurately LIGO can measure the binary's physical parameters; i.e., the location and orientation of the binary and the masses and spins of the two bodies.

Prof. Cutler will study:

- 1) the limitations on measurement accuracy due to random noise in the LIGO detectors;
- 2) the limitations on measurement accuracy due to inadequacies in the current state-of-the-art theoretical "template" waveforms.

The former study is important, in part, because the adjustable detector parameters that maximize signal strength are not generally the ones that maximize information, and LIGO will eventually want to strike a balance between those two goals. The latter study is important to other theorists who are currently trying to construct approximate models of the waveforms, since it will inform them of what accuracy they must strive for.

Related issues are being investigated by Kip Thorne's research group at Caltech. However, Cutler's research will be complementary to that of Thorne's group. Cutler will keep Thorne informed of his work, and vice-versa. Cutler will visit Thorne's group at Caltech at least once every two years.

Approved:

Barry Barish

Barry Barish
LIGO Principal Investigator

Curt Cutler
Pennsylvania State University
Principal Investigator

Aug 3, 1995

Date

Date