



**Attachment DAT to the
Memorandum of Understanding LIGO-M050348-00
between the Goddard Gravitational Wave Astrophysics Group
(GGWAG)
and the
Laser Interferometer Gravitational Wave Observatory (LIGO)
For The Period
August 15, 2007 - August 14, 2008**

This Attachment DAT to the Memorandum of Understanding LIGO-M050348-00 defines the role of the Goddard Gravitational Wave Astrophysics Group (GGWAG) as a Member of the LIGO Scientific Collaboration (LSC). In particular, it addresses data analysis activities in support of the initial LIGO interferometers. The period of performance for the activities in this Attachment is from August 15, 2007 - August 14, 2008.

1. Collaboration

Together, the LIGO Laboratory and the LIGO Scientific Collaboration (LSC) are responsible for implementing and exploiting the initial LIGO detector through its science data runs. The LSC has organized the data analysis effort into search groups which coordinate analysis, review, and publication on behalf of the collaboration. LSC groups are encouraged to participate in one or more of these groups.

MOU Attachment DAT defines the contributions of each participating group to the data analysis development groups.

2. Participation

During the period August 15, 2007 - August 14, 2008, the members of GGWAG will participate in the analysis of initial LIGO data in the following areas:

a. Binary Inspirals

Not Applicable

b. Bursts

Work this year will focus on utilizing the Hilbert-Huang Transform (HHT) to search for frequency-modulated BH binary merger signals. Preliminary studies have indicated that the high time-frequency resolution of the HHT gives it an advantage over other techniques (eg, FFT) for identifying a strongly frequency modulated signal at low SN.

We intend to firm up the preliminary efficiency calculations that compare the HHT to the FFT for the merger signals, and present this to the Burst group for feedback. Assuming a positive response we will develop an analysis pipeline to search for this signal using S5 data. The goal will be to develop the HHT analysis pipeline so that it can be used in a rigorous way for the S6 enhanced LIGO data run. In addition, the preliminary S5 HHT analysis will lead to the identification of false alarms and noise non-stationarity, which will be investigated as part of the HHT detector characterization work. The detector characterization work will have priority over the signal searching, which will be done to the extent that time allows.

c. Stochastic

Not Applicable

d. Continuous

Not Applicable

e. Other Contributions

Not Applicable

3. Resource Sharing

The LIGO Laboratory will contribute resources including allocation of appropriate scientific and engineering personnel, research facilities, and funding in support of the effort in Item No. 2, as indicated below.

a. Research accommodations for GGWAG group members while on LIGO research assignment at any LIGO Laboratory site.

Not Applicable

b. Access to LIGO data through established LSC channels in support of this work.

Not Applicable

4. Coordination and Reporting

GGWAG will perform research within the structures established by the LIGO Laboratory and the LSC where appropriate.

In particular, with reference to activities described above:

2a will be carried out within the LSC Inspiral Search Group.

2b will be carried out within the LSC Burst Search Group.

2c will be carried out within the LSC Stochastic Search Group.

2d will be carried out within the LSC Continuous Waves search Group.

This includes keeping the Group leaders informed of activities and plans, reporting to the group at meetings and telecons, and through technical documents submitted to the LIGO Document Control Center.

In addition, an annual report will be submitted with the update to this Attachment, giving a summary status on research by topic as indicated in Item No. 2, including progress against the milestones if any, significant accomplishments such as new insights/discoveries or publications, issues of concern if any, and an indication of invested time.

This Attachment will be updated at least annually with a plan of activities for the succeeding one-year period. These documents will be due one month before the close of the period of performance under this Attachment.

5. Computer Code

All computer code delivered to the LSC under this Attachment must be developed in consultation with the LSC Data Analysis Software Working Group (DASWG) and archived, documented and reviewed as determined by that group.



Jay Marx
LIGO Laboratory Director



Jordan Camp
**Principal Investigator(s)
GGWAG**



David Reitze
LSC Spokesperson