

**Attachment OPS to the**  
**Memorandum of Understanding (LIGO-M 050320 -00-M)**  
**between the**  
**Northwestern U. Gravitational Wave Astrophysics Group ( NUGWAG )**  
**and the**  
**Laser Interferometer Gravitational Wave Observatory (LIGO)**  
**August 15, 2006**

This Attachment OPS to the Memorandum of Understanding LIGO-M 050320 -00-M defines the role of the **Northwestern U. Gravitational Wave Astrophysics Group** as a Member of the LIGO Scientific Collaboration (LSC) in the areas of detector commissioning, detector characterization, and operations support in the initial LIGO interferometers. The period of performance for the activities in this Attachment is from August 15, 2006 to August 15, 2007.

1. 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. LSC groups are encouraged to contribute to the commissioning, characterization, and operation of the LIGO detectors, as members of working groups established by the LIGO Laboratory and the LSC.
2. During the period August 15, 2006 to August 15, 2007, the members of **NUGWAG** will participate in the initial LIGO detector research program in the following areas:

**b) Detector Characterization**

O'Shaughnessy continues to examine statistical learning theory and automated pattern-discovery techniques, with a broad range of applications to several LIGO task groups. As an extension of his scimon duties over the course of S5, he intends to collaborate with Natalia Zotov, Gaby Gonzales, and others in the detchar and inspiral groups to develop and apply automated methods for detector characterization.

d) 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 **NUGWAG** group members while on LIGO research assignment at any LIGO Laboratory site,
  - b) Access to LIGO data through established LSC channels in support of this work.
  - c) Not Applicable

#### 4. Coordination and Reporting -

**NUGWAG** will perform this research within the structures established by the LIGO Laboratory and the LSC where appropriate. In particular activities described in Item 2a) will be carried out in coordination with the LIGO Laboratory Commissioning Leader, Item 2b) will be carried out within the Detector Characterization Working Group of the LSC, and Item 2c) will be carried out in coordination with the LHO {or LLO} Site Head. Coordination will include 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 on-year period. These documents will be due one month before the close of the period of performance under this Attachment.

5. 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.

Approved:



Jay Marx  
LIGO Laboratory Director



Vassiliki Kalogera  
Principal Investigator

Northwestern U. Gravitational Wave Astrophysics



Peter Saulson  
LSC Spokesperson