

Attachment Number A to the
Memorandum of Understanding (LIGO-M960071-00-M)
between the
University of Florida Laser Interferometric Gravitational Wave Group
(UFLIGO)
and the
Laser Interferometer Gravitational Wave Observatory (LIGO) Laboratory
August 15, 1999

This Attachment to the Memorandum of Understanding LIGO-M960071-00-M covers the role of the University of Florida Laser Interferometric Gravitational Wave Group (UFLIGO) as a Charter Member of the LIGO Scientific Collaboration (LSC) and a member of the LIGO I Development Group (LIDG). The period of performance for the activities in this Attachment is from August 15, 1999 to February 15, 2000. This period may be modified by agreement to a revision of this Attachment.

1. LIGO Scientific Collaboration - The LIGO Scientific Collaboration is organized as a separate organization from the LIGO Laboratory. It includes scientists from the LIGO Laboratory, and those from collaborating institutions, and has its own leadership and governance. The Collaboration will ensure equal scientific opportunity for individual participants and institutions. It will organize the research, publications, and all other scientific activities. The Collaboration will report to the Laboratory Directorate for final approval of its research program, technical work, observational physics publications, and talks announcing new observations and physics results. This will be done through regular reports to the Directorate and its PAC.
2. Charter Membership - An initial period for formation of the Charter group of institutions in the LIGO Scientific Collaboration commenced on March 1, 1997 and ended following the first full meeting of the Collaboration at which the Collaboration Council assumed its role.

Following the charter period proposals will be evaluated through the Collaboration Council. With Collaboration approval, an MOU with the LIGO Laboratory, including Attachments defining specific work, will be required for any participating institutions.

3. This document is an agreement between the University of Florida Laser Interferometric Gravitational Wave Group (UFLIGO) and the LIGO Laboratory concerning the activities of UFLIGO as a Collaborating Institution in the LIGO Scientific Collaboration (LSC) and in the LIGO I Development Group (LIDG). Specific research to be undertaken in support of LIGO is as indicated in item No. 8. below.
4. LIGO I Development Group - The LIGO I Development Group is the scientific collaboration

for implementing and exploiting the initial LIGO detector and physics through the initial science data run. Only groups who establish a specific Attachment approved by the LIGO Laboratory, which defines a sufficient contribution and participation in LIGO I development, implementation or data analysis will be part of this initial LIGO data run and science. Participation in future data runs and science that follow LIGO I will be possible for other groups, with guidelines to be determined by the LIGO Scientific Collaboration. It is anticipated that LIGO I data will only be made available through formal collaboration within the LIGO I Development Group during the first two years following its collection.

The general guideline for institutional membership in the LIGO I Development Group is that the contribution per collaborator of any new group to the design, construction, and implementation of the initial LIGO detector and to the first data run be comparable to that of the LIGO Laboratory scientists.

5. Report of Progress - UFLIGO will provide a status report on its activities in support of LIGO every six months. The report will consist of: a) a summary status on research by topic as indicated item No. 8 below 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, b) updated List of Collaborators, and c) a plan of activities for the succeeding six-monthly period. The report will be due one month before the close of the period of performance under the Attachment in question.
6. Term of Membership - The Membership will be renewed every six months upon evidence of satisfactory performance of agreed upon duties.

The coordinates of UFLIGO members are included in the Attachment Z to the Memorandum of Understanding LIGO-M960071-00-M.

7. Intellectual Property Rights - The rights to intellectual property developed under this Attachment will be subject to the National Science Foundation Grant Policy as indicated in Section 730, Intellectual Property.
8. During the period August 15, 1999 to February 15, 2000, UFLIGO will:

a) IOO: Complete the installation of the 2k Input Optics (IO) including final alignment of the PSL table, final alignment of the mode cleaner, length locking of the mode cleaner, alignment sensing and locking of the mode cleaner, and measurements of the MC noise performance.

Installation will begin on the Livingston 4k Input Optics, including the IOO PSL table optics, suspended optics preparation, and installation and alignment of the suspended optics.

b) End-to-End Simulation: Work on development of the simulation program for Hanford 2k interferometer and on documentation.

The 2k interferometer simulation program combines the PSL, IO and core optics system with their servo controls. The University of Florida (UF) simulation group will complete the

description of the IO simulation program and integrate it into the entire interferometer simulation program. The integration assumes the development of the IO interfaces to the PSL, and core optics and implementation of the simulation modules for the IO control system.

The LIGO notes, describing the IO optics simulation including the Mode Decomposition Formalism and IO Optics simulation modules, will be prepared.

c) Data Analysis: Data characterization will continue. Requests will be made for all available techniques for removing isolated lines from the frequency spectrum. These are to be implemented and compared before any recommendation of an optimum scheme can be presented. Similarly, any available technique for analyzing resonances, as distinct from other forms of line spikes, will also be called for.

The data characterization is being carried out in conjunction with the a new ACIGA group at the Australian National University (ANU). The first results are expected in time for the TAMA conference.

9. During the period August 15, 1999 to February 15, 2000, the LIGO Laboratory will share as requested and appropriate the LIGO data of relevance to the research focus in Item No. 8 above.
10. The research effort pursuant to this Attachment A will be coordinated by Guenakh Mitselmakher and Albert Lazzarini on behalf of UFLIGO and LIGO Laboratory, respectively.
11. 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. 8, as indicated below. These resources will be in addition to the coordination effort and data to be made available per Item No. 9 above.
 - a) LIGO research effort at the University of Florida is supported in part with the LIGO Laboratory funds under the Caltech Purchase Order for IOO design and fabrication and detector integration and operations.
 - b) Provide accommodations for UFLIGO collaborators while on research assignment on LIGO at Caltech and/or at LIGO Hanford and LIGO Livingston Observatory sites.

Approved:

Barry Barish
 Barry Barish
 LIGO Laboratory Director
Jan 10, 2000
 Date

Guenakh Mitselmakher
 Guenakh Mitselmakher
 UFLIGO Principal Investigator
Jan 15, 2000
 Date

Albert Lazzarini
 Albert Lazzarini
 LIGO Staff
28 Nov 1999
 Date