

Attachment Number A to the
Memorandum of Understanding (LIGO-M010297-00-M)
between the
Relativity and Astrophysics Group of Louisiana Tech University
and the
Laser Interferometer Gravitational Wave Observatory (LIGO) Laboratory
February 15, 2003

This Attachment A to the Memorandum of Understanding LIGO- M010297-00-M covers the role of the Relativity and Astrophysics Group of Louisiana Tech University as a Member of the LIGO Scientific Collaboration (LSC) and a member of the LIGO I Development Group (L1DG). The period of performance for the activities in this Attachment is from February 15, 2003 to August 15, 2003. This period may be modified by agreement to a revision of this Attachment.

1. LIGO Scientific Collaboration - The LIGO Scientific Collaboration (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 semi-annual 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 and approved, as appropriate, through the Collaboration Council. 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 Relativity and Astrophysics Group of Louisiana Tech University and the LIGO Laboratory concerning the activities of Relativity and Astrophysics Group of Louisiana Tech University as a Collaborating Institution in the LIGO Scientific Collaboration (LSC) and in the LIGO I Development Group (L1DG), and as indicated in Items No. 8, 9 and 10.
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 sci-

ence 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 – The Relativity and Astrophysics Group of Louisiana Tech University 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. 10, 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 the Relativity and Astrophysics Group of Louisiana Tech University members are included in the Attachment Z to the Memorandum of Understanding LIGO-M010297-00-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. LAL Software Conventions - It is necessary that any delivered code conforms to the LAL style as laid out in the LAL specification T990030. This includes: 1) coding style, headers, etc.; 2) use of function calls, etc.; 3) organization of software in the directory structures indicated in the document; 4) inclusion of test codes and validation tests to enable users to verify successful installation of implementation; and 5) documentation and users manuals (html or pdf) to enable users to understand and adopt code.
9. LSC Service Functions - Participation in LIGO I brings with it responsibility for service functions to support the overall effort in achieving high detector sensitivity and high data quality. In particular, each LIGO I group is expected to assist in the staffing of scientific monitoring shifts during organized data runs. The staffing of these shifts is notable for both its importance and the travel burden it places on scientists. This burden makes an equitable shift allocation mechanism necessary.

A nominal guideline is that each LIGO I group should staff a fraction of the shifts comparable to its FTE fraction devoted to LIGO I activities. An eight hour shift is assumed. The current count of FTE in the Collaboration is 127 (not including GEO FTE). The Relativity and Astrophysics Group of Louisiana Tech University has 1 FTE associated with LIGO I and is expected to staff .8% of the scientific monitoring shifts during this MOU period.

Natalia Zotov will be responsible for interaction with the designated LSC Shift Organizer (currently Keith Riles of Michigan Univ.) with respect to the Relativity and Astrophysics Group's Service Function commitments.

Groups making extensive contributions to the LSC in other service efforts that involve a substantial travel burden may request a reduction in their nominal share of shift staffing. Those efforts can include:

- 1) Commissioning and instrument improvement
- 2) Participation in on-site detector characterization investigations
- 3) Development/operation of analysis software/hardware infrastructure and validation of analysis software that requires travel away from the home institution.

10. During the period February 15, 2003 to August 15, 2003, Zotov will be involved as follows:

Detector Characterization and LIGO I Data Analysis

a) Zotov will continue work on PTmon, with trend writing as the next priority. The data resulting from S2 run will need preliminary analysis during the next six months.

b) Zotov will continue to participate in the analysis efforts of the Inspiral Upper Limit Group, especially in the area of vetoes, and trying to determine the causes of candidates that survive the more general vetoes. Zotov will also participate in critiquing the S1 paper the Group is drafting.

11. During the period February 15, 2003 to August 15, 2003, the LIGO Laboratory will provide, as requested and necessary, LIGO data of relevance to the research topics in Item No. 10.

12. The Detector Characterization and LIGO I Data Analysis efforts, pursuant to this Attachment A, will be coordinated by Natalia Zotov, and Mike Zucker, Keith Riles and Albert Lazzarini on behalf of the Relativity and Astrophysics Group of Louisiana Tech University, the LIGO Livingston Observatory, the LSC, and the LIGO Laboratory, respectively.

12. Resource Sharing: The LIGO Livingston Observatory will make research facilities available in support of the effort in Item No. 10, as indicated below.

a) Office space and computer support for Relativity and Astrophysics Group of Louisiana Tech University investigators while on LIGO research assignment at Caltech, and /or LIGO sites.

Approved:

Barry C Barish

Barry Barish
LIGO Laboratory Director

11-Jan-03

Date

Natalia Zotov

Natalia Zotov
Principal Investigator
Relativity and Astrophysics Group
Louisiana University

2-10-04

Date

Albert Lazzarini

Albert Lazzarini
LIGO Laboratory Data and Computing
Group Leader

6 Jan 2004

Date

Gene Reeves for K. Riles

Keith Riles
LSC Shift Organizer

01-07-04

Date