

**Attachment Number A to the
Memorandum of Understanding (LIGO-M950037-00-M)
between the
University of Colorado
and the
Laser Interferometer Gravitational Wave Observatory (LIGO) Laboratory
August 15, 1998**

This Attachment to the Memorandum of Understanding LIGO-M950037-00-M covers the role of the University of Colorado JILA Gravity Group (JILAGG) as a Charter 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 August 15, 1998 to September 10, 1998. Effective September 10, 1998 the LIGO I related work and JILAGG activity associated with this Attachment A will cease.

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 Colorado and the LIGO Laboratory concerning the activities of the University of Colorado JILAGG as a Collaborating Institution in the LIGO Scientific Collaboration (LSC) and in the LIGO I Development Group (L1DG), and 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 Labo-

ratory, 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 - University of Colorado JILAGG 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 University of Colorado JILAGG members are included in the Attachment Z to the Memorandum of Understanding LIGO-M950037-00-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, 1998 to September 10, 1998, David Crooks and Joe Giaime will work on the following tasks:
 - a) Analysis of data acquired during the First Article isolation stack installation at Hanford in early June and late August of 1998. The data addresses the load dependent yaw of the table in a HAM seismic isolation stack.
 - b) Measurement of the variation of Q in a constrained-layer damped cantilever spring with temperature. The cantilever spring is fabricated from the same constrained-layer materials as coil springs in LIGO isolation stacks.

Note: D. Crooks will complete his summer research assistantship at the University of Colorado end of August 1998 and return to the University of Glasgow. J. Giaime will leave the University of Colorado beginning of September 1998 for a LIGO position at MIT. The LIGO I related work will cease at the University of Colorado with J. Giaime's departure.

9. During the period August 15, 1998 to September 10, 1998, the LIGO Laboratory will share, as requested and appropriate, LIGO data of relevance to the research topics in Item No.8 above.
10. The research effort pursuant to this Attachment A will be coordinated by Robin Stebbins and Syd Meshkov on behalf of the University of Colorado and the 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) Provide accommodations for JILAGG investigators while on LIGO research assignment at Caltech, and/or LIGO sites.

Approved:

Barry Barish
Barry Barish
LIGO Laboratory Director

Robin Stebbins
Robin Stebbins
JILAGG Principal Investigator

4-19-00
Date

17 Mar. 2000
Date