

**Attachment Number B 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, 1997**

This Attachment to the Memorandum of Understanding LIGO-L950037-00-M covers the role of the University of Colorado as a Charter Member of the LIGO Scientific Collaboration (LSC) and a member of the Isolation/Suspension/Thermal Noise Development Group (ISTNDG). The period of performance for the activities in this Attachment is from August 15, 1997 to February 15, 1998. This period may be modified by agreement to a revision of this Attachment.

1. LIGO Scientific Collaboration - The LIGO Scientific Collaboration will be organized as a separate organization from the LIGO Laboratory. It will include scientists from the LIGO Laboratory, and those from collaborating institutions, and will have 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 will commence on March 1, 1997 and will end following the first full meeting of the Collaboration at which the Collaboration Council will assume its role. We expect that this transition will occur within six months. Membership in the Collaboration during this charter period will be initiated by proposal to the LIGO Laboratory Directorate.

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 noted below, under provision 8, of the University of Colorado as a Collaborating Institution in the LIGO Scientific Collaboration (LSC) and in the Isolation/Suspension/Thermal Noise Development Group (ISTNDG).

4. Isolation/Suspension/Thermal Noise Development Group - The Isolation/Suspension/Thermal Noise Development Group (ISTNDG) will be the scientific collaboration for defining and developing future isolation and suspension improvements for use in advanced subsystems for the initial LIGO interferometers or in entirely new advanced interferometers. A specific Attachment will define the roles and responsibilities of groups in this development group. Members of this group will normally be authors on publications reporting the work of the group and will normally be eligible to participate in data runs and science beyond the LIGO I data run.
5. Report of Progress - The University of Colorado will provide a summary report of progress, monthly, by e-mail to the Collaboration Council and to the LIGO Laboratory Director. The University of Colorado will submit a complete report on its activities every six months, supply an updated List of Collaborators, and a plan of activities for the next six months. This report should be submitted one month before the updated attachment will take effect.
6. Term of Membership - Membership will be renewed every six months upon evidence of satisfactory performance of agreed upon duties.
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. The JILA Gravity Group (JILAGG) consists of James Faller (Acting Division Chief of the NIST Quantum Physics Division at JILA), Peter Bender (JILA Fellow), Robin Stebbins and Joseph Giaime (Senior Research Associates at JILA), Sam Richman (Research Associate through August 31, 1997), and Tara Trumbull (U of Colo. graduate student). JILA is a joint institute of the University of Colorado at Boulder and of the National Institute of Standards and Technology (NIST). The JILAGG is currently carrying out NSF-funded active seismic isolation research with possible future applications to LIGO. Also, John Hall (JILA Fellow) is working to become involved with the LSC in the near future.

During the period August 15, 1997 - February 15, 1998, the entire JILAGG will continue research in advanced isolation/suspension systems in cooperation with the Isolation/Suspension/Thermal Noise Development Group (ISTNDG). During this period JILAGG will:

- a.) Continue development of JILA's proof-of-principle low frequency active isolation platform. This is a 3-stage platform designed to isolate a 60 kg payload from ground vibration by approximately 40 dB per stage. Currently, two stages are operational.
- b.) Carry out laboratory testing and numerical simulation of improved components for active isolation platforms, which might be used in an Advanced LIGO suspension/ isolation system.
- c.) Begin construction and use of a state-space model of a complete Advanced LIGO suspension/ seismic isolation system, so that the details might be explored and (along with concurrent experimental work) lead to a conceptual design for such a system during the next several years.

Approved:

Barry Barish

Barry Barish
LIGO Laboratory Director

James E. Faller

James E. Faller
JILAGG Principal Investigator

Aug 13, 1997

Date

Aug 19, 1997

Date