

**Attachment Number D to the
Memorandum of Understanding (LIGO-M950042-A-M)
between the
Galileo Program of Stanford University
and the
Laser Interferometer Gravitational Wave Observatory (LIGO) Laboratory
August 15, 1997**

This Attachment to the Memorandum of Understanding LIGO-M950042-A-M covers the role of the Galileo Program of Stanford University as a Charter Member of the LIGO Scientific Collaboration (LSC) and as a member of the Advanced Detector Configurations Development Group (ADCDG). 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 Galileo Program of Stanford University University and the LIGO Laboratory concerning the activities noted below, under provision 8, of the Galileo Program as a Collaborating Institution in the LIGO Scientific Collaboration (LSC) and in the Advanced Detector Configurations Development Group (ADCDG).

4. Advanced Detector Configurations Development Group - The Advanced Detector Configurations Development Group (ADCDG) will be the scientific collaboration for defining and developing entirely new advanced interferometers. It is expected that this development group will pursue research in dual recycling, resonant sideband extraction, Sagnac interferometers, systems with non-transmitting optics and other advanced configurations. 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 Galileo Program will provide a summary report of progress, monthly, by e-mail to the Collaboration Council and to the LIGO Laboratory Director. The Galileo Program 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. During the period August 15, 1997 - February 15, 1998, Profs. Robert Byer and Martin Fejer, Research Associate Eric Gustafson, Postdoc Charles Harb, and Graduate Student Peter Bajersdorf will carry out research on Sagnac interferometers including:
 - a.) Studies of thermal loading effects and how they reduce fringe contrast in a table top apparatus;
 - b.) Experiments on scattered light in Sagnac interferometers and the use of Broadband light sources to reduce the coherent interference between parasitic light paths;
 - c.) Delay line Sagnac interferometers and the reduction in fringe contrast caused by clipping at the entrance and exit holes in the delay line mirrors.

Approved:

Barry Barish
Barry Barish
LIGO Laboratory Director

Robert L. Byer
Robert L. Byer
Principal Investigator

Aug 15, 1997
Date

Oct 3, 1997
Date