

Attachment ACF to the
Memorandum of Understanding (LIGO-M 0970077 -00-M)
between the
German/British Collaboration for the Detection of Gravitational Waves (GEO 600)
and the
Laser Interferometer Gravitational Wave Observatory (LIGO)
August 15, 2006

This Attachment ACF to the Memorandum of Understanding LIGO-M 0970077 -00-M defines the role of the **German/British Collaboration for the Detection of Gravitational Waves** as a Member of the LIGO Scientific Collaboration (LSC) and a member of the Advanced Detector Configurations Development Group (ADCDG). The period of performance for the activities in this Attachment is from August 15, 2006 to August 15, 2007.

1. Advanced Detector Configurations Development Group - The Advanced Detector Configurations Development Group (ADCDG) is 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. MOU Attachments define the roles and responsibilities of groups in this development group.
2. During the period August 15, 2006 to August 15, 2007, the members of **GEO 600** will participate in ADCDG in the following areas:

a) Interferometer Configurations

At Birmingham it is proposed to provide, distribute and maintain the FINESSE code with suitable input files for Advanced LIGO and to obtain simulation results with respect to LSC and ISC.

At Glasgow and Hannover it is proposed to continue to support configurations research at the Caltech 40m prototype, mainly through participation on the advisory committee and occasional visits.

At Glasgow a suspended, diffractively-coupled cavity will be prepared and constructed, in cooperation with the Hannover group. The results from the previously reported "3 mirror cavity" tests will be written up for publication.

At Hannover, the squeezing experiment will continue with an investigation of excess homodyne noise below 100\,Hz. The feasibility of incorporating Kerr media in interferometers will be considered. An all-reflective low-loss 50/50 grating beam splitter will be fabricated. This beam splitter will be used in a Michelson interferometer. Power-recycling will be used to measure the loss.

At Golm and Hannover, theoretical and modelling work will continue. The main topics will be simulations and calculations relating to the development of Advanced LIGO ISC and continued consideration of potential QND schemes for 3rd generation detectors.

c) Other Contributions

Not Applicable

3. 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. 2, as indicated below.
 - a) Research accommodations for **GEO 600** group members while on LIGO research assignment at any LIGO Laboratory site,
 - b) Access to LIGO data through established LSC channels in support of this work.
 - c) Not Applicable

4. Coordination and Reporting -

GEO 600 will perform this research within the structures established by the LIGO Laboratory and the LSC where appropriate. In particular activities described in Item 2 will be carried out within the Advanced Detector Configurations Development Group of the LSC. Coordination will include keeping the Group leaders informed of activities and plans, reporting to the group at meetings and telecons, and through technical documents submitted to the LIGO Document Control Center.

In addition, an annual report will be submitted with the update to this Attachment, giving a summary status on research by topic as indicated in Item No. 2, 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. This Attachment will be updated at least annually with a plan of activities for the succeeding on-year period. These documents will be due one month before the close of the period of performance under this Attachment.

5. All computer code delivered to the LSC under this Attachment must be developed in consultation with the LSC Data Analysis Software Working Group (DASWG) and archived, documented and reviewed as determined by that group.

Approved:



Jay Marx

LIGO Laboratory Director



Peter Saulson

LSC Spokesperson



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Principal Investigator(s)

GEO Project