



**Attachment ACF to the
Memorandum of Understanding LIGO-M970077-00
between the German/British Collaboration (GEO 600) for the
Detection of Gravitational Waves (GEO600)
and the
Laser Interferometer Gravitational Wave Observatory (LIGO)
For The Period
August 15, 2007 - August 14, 2008**

This Attachment ACF to the Memorandum of Understanding LIGO-M970077-00 defines the role of the German/British Collaboration (GEO 600) for the Detection of Gravitational Waves (GEO600) 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 described in this Attachment is from August 15, 2007 - August 14, 2008.

1. Collaboration

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 Attachment ACF defines the role and responsibilities of workgroups participating in this development group.

2. Participation

During the period August 15, 2007 - August 14, 2008, the members of GEO600 will participate in the ADCDG in the following areas:

a. Interferometer Configurations

At Glasgow the diffractively-coupled, suspended optical cavity will be characterised. A design study will be carried out into an experimental test of radiation pressure effects, as an early step on the path to gaining experience with QND configurations.

b. Squeezed Light Generation

At Birmingham, work will continue to coordinate the GEO Simulation group, and lead further development of FINESSE, particularly incorporation of quantum noise.

At Hannover, experimental work will continue. The main topics will be the investigation of a long term stable squeezer setup applicable for gravitational wave detectors, more fundamental research of Kerr media and their potential application and the extension of the power-recycled grating Michelson to a dual-recycled interferometer.

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

At Hannover, with input from Glasgow, a low-noise interferometer prototype facility will be constructed and commissioned: during the period of this attachment work will focus on vacuum system and isolation system design and procurement.

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 GEO600 group members while on LIGO research assignment at any LIGO Laboratory site.

Not Applicable

- b. Access to LIGO data through established LSC channels in support of this work.

Not Applicable

4. Coordination and Reporting

GEO600 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.

This includes 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 one-year period. These documents will be due one month before the close of the period of performance under this Attachment.

5. Computer Code

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.



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LIGO Laboratory Director



Karsten Danzmann
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David Reitze
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