

Attachment OPT to the
Memorandum of Understanding (LIGO-M 050347 -00-M)
between the
Institute of Applied Physics of Russian Academy of Science (IAP)
and the
Laser Interferometer Gravitational Wave Observatory (LIGO)
August 15, 2006

This Attachment OPT to the Memorandum of Understanding LIGO-M 050347 -00-M defines the role of the **Institute of Applied Physics of Russian Academy of Science** as a Member of the LIGO Scientific Collaboration (LSC) and a member of the Optics Development Group (ODG). The period of performance for the activities in this Attachment is from August 15, 2006 to August 15, 2007.

1. Optics Development Group - The Optics Development Group (ODG) is the scientific collaboration for defining and developing instruments in optics for use in advanced subsystems for the initial LIGO interferometers or in entirely new advanced interferometers. 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 **IAP** will participate in ODG in the following areas:

a) Optics Characterization

Design of the Faraday isolator housing will be changed to avoid any air holes. We will design magnet system with reduced outside magnet field. Also procedure of each individual magnet cleaning and the magnet system assembling will be developed in collaboration with UF group. New version of magnet system will be manufactured, delivered and passed through vacuum test. New set of DKDP crystals will be grown, polished and delivered to UF. After vacuum test the full optical test of high aperture (20mm) Faraday isolator with dual (depolarization and aberration) compensation will be done before installing in HLO.

We will continue to model bulk (by CW Yb:fiber) heat deposition in AdLIGO Core Optics and thermal compensation using scanning beam of CO₂ laser. The white light interferometer and 2D version of the scanning Hartman sensor will be used in these measurements. The white light interferometer will be modified to provide maximal time of sequence recording at least one hour. Improved mathematical algorithm will be developed for the scanning Hartman sensor.

A white light interferometer for in situ measurements of ETM optical thickness will be installed and tested on ETM in the LIGO Livingston detector (if invitation will be issued).

b) 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 **IAP** 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 -

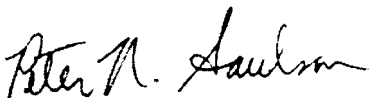
IAP will perform this research within the structures established by the LIGO Laboratory and the LSC where appropriate. In particular activities described in Item 2 will be carried out within the Optics Development Working Group of the LSC. Coordination will include keeping the Group leaders informed 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

Alexander Sergeev

Principal Investigator

Institute of Applied Physics of Russian Acaden

