



**Attachment SUS to the  
Memorandum of Understanding LIGO-M950059-00  
between the Experimental Relativity Group of the Louisiana State  
University (LSUERG)  
and the  
Laser Interferometer Gravitational Wave Observatory (LIGO)  
For The Period  
August 15, 2008 - August 14, 2009**

This Attachment SUS to the Memorandum of Understanding LIGO-M950059-00 defines the role of the Experimental Relativity Group of the Louisiana State University (LSUERG) as a 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, 2008 - August 14, 2009.

## **1. Collaboration**

The Isolation/Suspension/Thermal Noise Development Group (ISTNDG) 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 Attachment SUS defines the roles and responsibilities of workgroups in this development group.

## **2. Participation**

During the period August 15, 2008 - August 14, 2009, the members of LSUERG will participate in ISTNDG in the following areas:

a. Coating Losses

*Not Applicable*

b. Suspension Design for Advanced LIGO

Fabrice Matichard will support the development and testing of the Advanced LIGO seismic isolation system integrating the three stages of isolation: HEPI External Seismic Isolation Double stage Internal Seismic Isolation Quadruple Pendulum. This work will be done on the Advanced LIGO prototype in the lab at MIT, in close collaboration with members of that lab and others within the LIGO Scientific Collaboration (LSC).

This work will involve the controls commissioning of the sub-systems and the development of cross supervision warranting the safety of the Quadruple Pendulum Noise prototype made of fused silica wires.

Characterization and controls results may lead to possible rework of both the prototypes and their supporting instrumentation and control systems.

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

Fabrice Matichard is hosted by the MIT LIGO group.

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

*Not Applicable*

### **4. Coordination and Reporting**

LSUERG will perform 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 Isolation/Suspension/Thermal Noise 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.

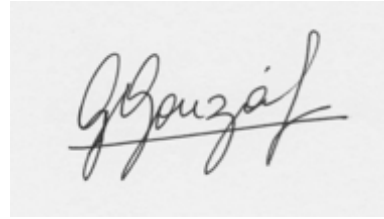
This Attachment will be updated at least annually with a plan of activities for the succeeding one-year period. These documents will be due one month before the close of the period of performance under this Attachment.

### **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.



Jay Marx  
**LIGO Laboratory Director**



Gabriela Gonzalez  
**Principal Investigator(s)**  
**LSUERG**



David Reitze  
**LSC Spokesperson**