

Memorandum of Understanding (LIGO-M070064-00-M)**between the****Eötvös Gravity Research Group (EIRSA, Eötvös University, Budapest, Hungary) (EGRG)****and the****Laser Interferometer Gravitational Wave Observatory (LIGO)****March 25, 2007**

The purpose of this Memorandum of Understanding (MOU) is to establish and define a collaborative relationship between the Eötvös Gravity Research Group (EIRSA, Eötvös University, Budapest, Hungary) (EGRG) and the Laser Interferometer Gravitational-Wave Observatory (LIGO). Both parties to this agreement share the broad goals of developing the instruments and techniques for detecting and studying gravitational waves, and subsequently using them as an astrophysical probe. Under this MOU, the EGRG Group will become a member group of the LIGO Scientific Collaboration.

1. The Eötvös Gravity Research Group (EIRSA, Eötvös University, Budapest, Hungary) (EGRG) consists of Professor Zsolt Frei, who will serve as Principal Investigator for research in LIGO, and Advanced LIGO. The focus of the work done by the EGRG Group under this agreement will be contributions to data analysis (bursts), detector characterization studies, and Advanced LIGO physical environment monitoring system.
2. LIGO comprises two parts: the LIGO Laboratory and the LIGO Scientific Collaboration. These two entities report to the LIGO Directorate, consisting of the LIGO Director, the LIGO Scientific Collaboration Spokesperson, and the LIGO Laboratory Deputy Director. The design and construction of the LIGO Observatories were carried out by California Institute of Technology (Caltech) and the Massachusetts Institute of Technology (MIT) under a Cooperative Agreement between the National Science Foundation (NSF) and Caltech. The LIGO Oversight Committee supervises the realization of LIGO.
 - A. The LIGO Laboratory is responsible for the operation of the LIGO Observatories, the development and implementation of future detector systems, and participates in all aspects of the research with the LIGO detectors. LIGO is a system of three interferometric Fabry-Perot antennas, two of them 4 kilometers long and the third one 2 kilometers long, aimed at the simultaneous detection of gravitational waves in the frequency range 40-6000 Hz. LIGO Observatories are located in Hanford, Washington and in Livingston Parish, Louisiana (USA) and began observations in the year 2002. The LIGO Laboratory is funded through a Cooperative Agreement between the National Science Foundation and Caltech, with the portion of the LIGO Laboratory at MIT funded through a subcontract.

- B. The LIGO Scientific Collaboration (LSC) is organized as a separate organization from the LIGO Laboratory. It includes scientists from the LIGO Laboratory, and those from collaborating institutions, and has its own leadership and governance. The Collaboration ensures equal scientific opportunity for individual participants and institutions. It organizes the research, publications, and all other scientific activities. The Collaboration reports to the LIGO 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 Program Advisory Committee. The organization of the LSC and its governance are defined in its Charter.
3. As a member group of the LSC, the EGRG Group will participate in the governance of the LSC and in setting its policies and procedures, as defined in the LSC charter. Similarly, it agrees to abide by the policies and procedures adopted by the LSC and posted on its website (<http://www.ligo.org/policies.html>), concerning publication, data access, software standards, and so on.
 4. Participation in the LSC brings with it responsibility for service functions to support the overall effort in achieving high detector sensitivity and high data quality. In particular, each LSC group is expected to assist in the staffing of scientific monitoring shifts during organized data runs. The staffing of these shifts is notable for both its importance and the travel burden it places on scientists.
 5. Each party to this agreement continues to be responsible for all support of its staff including travel costs associated with the activities under this agreement. Exceptional support of travel by the other institution may be allowed for travel requested by that institution.
 6. Attachments to this MOU will be prepared annually to define the specific activities and responsibilities of the EGRG Group and to define any resources to be provided by the LIGO Laboratory to the EGRG Group in support of those activities.
 7. EGRG Group will provide a status report on its activities in support of LIGO annually. The report will consist of a summary status on research by topic as indicated in the Attachments for that period 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 by each member of the group. The report will be due one month before the close of the period of performance under the Attachments in question.
 8. The LSC will review the progress report against the Attachments from the previous year and assess the Attachments for the up-coming year annually, under its established procedure, and recommend acceptance or rejection of the Attachment by the LIGO Director and the LSC Spokesperson.
 9. The membership list of the EGRG group will be updated at least every six months. EGRG Group members and appropriate contact information will be provided in electronic form as Attachment Z to this Memorandum of Understanding. In cases where individuals who

leave the group have had access to LIGO data and this access should be terminated, the EGRG Group Principal Investigator is responsible for timely notification to the Directorate and to the computing committee so access may be revoked.

10. The LIGO Laboratory is responsible for obtaining NSF approval of collaborative Memoranda of Understanding where required. All Memoranda of Understanding will be provided to NSF for their information.
11. The rights to intellectual property developed under this Attachment using LIGO Laboratory resources will be subject to the National Science Foundation Grant Policy as indicated in Section 730, Intellectual Property.
 - A. In the event a patentable invention is conceived or first actually reduced to practice during the work of a member of the EGRG Group using LIGO Laboratory resources, he/she will:
 - i) make prompt disclosure of the invention to the Director of the LIGO Laboratory; and
 - ii) cooperate with LIGO Laboratory and supply all information and execute all papers including invention reports, records of invention, patent applications and powers of attorney, necessary and proper to fulfill the obligations of the LIGO Laboratory to the U.S. Government sponsor.
 - B. The ownership of inventions conceived solely by members of the EGRG Group or first actually reduced to practice at LIGO facilities solely by member of the EGRG Group shall be owned by the Eötvös University, Budapest, Hungary, although the LIGO Laboratory shall be granted a license to use such invention for noncommercial research purposes at LIGO facilities. Inventions that are conceived or first actually reduced to practice by both members of the EGRG Group and LIGO Laboratory staff shall be jointly owned by the Eötvös University, Budapest, Hungary and Caltech/MIT in proportion to the number of joint inventors from each institution.

In all other regards, the rights to intellectual property developed by members of the EGRG Group under this Attachment will be in accordance with the policies of Eötvös University, Budapest, Hungary.

12. This MOU will remain in force until the parties mutually agree to terminate it, or until it is terminated in accordance with LSC procedures.

Approved:

Jay Marx
LIGO Director

Zsolt Frei
Principal Investigator
Eötvös Gravity Research Group
(EIRSA, Eötvös University, Budapest, Hungary)

David Reitze
LSC Spokesperson

Attachment DAT to the
Memorandum of Understanding (LIGO-M 070064 -00-M)
between the
Eötvös Gravity Research Group (EIRSA, Eötvös University, Budapest, Hungary) (EGRG
and the
Laser Interferometer Gravitational Wave Observatory (LIGO)
March 15, 2007

This Attachment DAT to the Memorandum of Understanding LIGO-M 070064 -00-M defines the role of the **Eötvös Gravity Research Group (EIRSA, Eötvös University, Budapest, Hungary)** as a Member of the LIGO Scientific Collaboration (LSC), in particular, its activities in data analysis in support of the initial LIGO interferometers. The period of performance for the activities in this Attachment is from March 15, 2007 to August 15, 2007.

1. Together, the LIGO Laboratory and the LIGO Scientific Collaboration (LSC) are responsible for implementing and exploiting the initial LIGO detector through its science data runs. The LSC has organized the data analysis effort into search groups which coordinate the analyses, perform detailed reviews, and prepare publications on behalf of the collaboration. LSC groups are encouraged to participate in one or more of these groups. MOU Attachments define the contributions of each participating group to the data analysis groups.
2. During the period March 15, 2007 to August 15, 2007, the members of **EGRG** will participate in the analysis of initial LIGO data in the following areas:

a) Binary Inspirals

Not Applicable

b) Bursts

EEGG will concentrate on astrophysically motivated searches for narrow band gravitational wave signals lasting for tens to hundreds of seconds. The work will be coordinated with the Burst UL and ExTrig groups.

Using the specialized techniques, developed for searching for quasi-monochromatic gravitational wave signals, EGRG (initially in cooperation with GECO at Columbia) will look for GWs lasting for a second to minutes in S5 data around detected GRBs with multiple detector coverage. The initial search will be based on published theoretical predictions (e.g. M. van Puten).

c) Stochastic
Not Applicable

d) Continous
Not Applicable

e) 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 **EGRG** 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) Access to LIGO computing resources and expertise in support of this work.
Access to all data.

4. Coordination and Reporting -

EGRG will perform this research within the structures established by the LIGO Laboratory and the LSC where appropriate. In particular activities described in Item 2a) will be carried out within the LSC Inspiral Search Group, Item 2b) will be carried out within the LSC Burst Search Group, Item 2c) will be carried out within the LSC Stochastic Search Group and Item 2d) will be carried out within the LSC Continuous Waves search Group. 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 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

Zsolt Frei
Principal Investigator
Eötvös Gravity Research Group (EIRSA, Eötvös University, Budapest, Hungary)

David Reitze
LSC Spokesperson

Attachment OPS to the
Memorandum of Understanding (LIGO-M **070064 -00-M)**
between the
Eötvös Gravity Research Group (EIRSA, Eötvös University, Budapest, Hungary) (**EGRG**
and the
Laser Interferometer Gravitational Wave Observatory (LIGO)
March 15, 2007

This Attachment OPS to the Memorandum of Understanding LIGO-M **070064** -00-M defines the role of the **Eötvös Gravity Research Group (EIRSA, Eötvös University, Budapest, Hungary)** as a Member of the LIGO Scientific Collaboration (LSC) in the areas of detector commissioning, detector characterization, and operations support in the initial LIGO interferometers. The period of performance for the activities in this Attachment is from March 15, 2007 to August 15, 2007.

1. Together, the LIGO Laboratory and the LIGO Scientific Collaboration (LSC) are responsible for implementing and exploiting the initial LIGO detector through its science data runs. LSC groups are encouraged to contribute to the commissioning, characterization, and operation of the LIGO detectors, as members of working groups established by the LIGO Laboratory and the LSC.
2. During the period March 15, 2007 to August 15, 2007, the members of **EGRG** will participate in the initial LIGO detector research program in the following areas:

a) Detector Commissioning

First prepare and later station student(s) at an observatory for extended periods (months) to help the commissioning effort.

b) Detector Characterization

EGRG will initially contribute to detector characterization studies at one, important front.

EGRG will characterize the coupling and its time dependence during the S5 run between the gravitational wave channel (DARM-ERR) and the neighboring channels within the same DAQ unit at the 960Hz frequency range. The baseline study will use the existing "DuoTone" sinusoid type timing signals for each IFO. This study shall give a good handle on the amount of crosstalk versus time at that frequency. EGRG will attempt to rely on existing tools ranging from software lock-in amplifiers through IEEE digital scope algorithms to DMT monitor results if possible. Custom tools will only be created for this phase if absolutely necessary. Depending on the results, if there are interesting features or trends, EGRG later might decide to develop a specialized DMT monitor to automatize this investigation for the long term.

Knowing the general level of crosstalk around 960Hz, shall help EGRG to estimate how much of the other (wideband, colored, etc.) signals on neighboring channels could have "crosstalked" into the gravitational wave channel. Depending on this result, direct broadband measurements for each channel might become necessary later. EGRG shall also examine the viability to create a "synthetic" data stream to be subtracted from the gravitational wave datastreams based on the crosstalk measurements and the signals present in neighboring channels. (It might or might not be feasible and useful.)

c) Detector Operations

Prepare students and postdocs and later participate in scientific shifts during science runs.

d) Other Contributions

PEM system enhancement for Advanced LIGO (and potentially for LIGO/eLIGO):

Presently one fairly important aspect of the physical environment of the detectors is not monitored directly: the low frequency (<10Hz) acoustic environment. As infrasonic acoustic waves (a.) can travel quite large distances, (b.) are generated on site, (c.) can easily penetrate buildings with little attenuation and (d.) can couple into the resonances of the suspension/isolation structures situated at low frequencies (~O(1Hz)) it is very advisable to directly and sensitively monitor them at multiple locations.

EGRG will deliver (a.) self contained, (b.) electrically isolated (surges, lightning, etc.), (c.) networked, (d.) DC powered and (e.) ultra-low RFI/RMI emission multi-instrument capable pods ready to integrate into LIGO's, eLIGO's and AdvLIGO's data archival structure. It is envisioned that these pods can be installed both indoors or outdoors and have multi sensor capabilities. The minimum sensor deliverable shall be the low frequency acoustic environment monitor, but it is expected that other sensors can be easily integrated into the system if needed.

Design work will be done in consultation with expert LSC personnel (e.g. GECO, CDS) to ensure compatibility and end-user satisfaction. Development and prototype delivery/test timeline can be developed as the basic plans/interface requirements mature and become widely accepted.

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 **EGRG** 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)

4. Coordination and Reporting -

EGRG will perform this research within the structures established by the LIGO Laboratory and the LSC where appropriate. In particular activities described in Item 2a) will be carried out in coordination with the LIGO Laboratory Commissioning Leader, Item 2b) will be carried out within the Detector Characterization Working Group of the LSC, and Item 2c) will be carried out in coordination with the LHO {or LLO} Site Head. 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

Zsolt Frei
Principal Investigator
Eötvös Gravity Research Group (EIRSA, Eötvös University, Budapest, Hungary)

David Reitze
LSC Spokesperson

Attachment OUT to the
Memorandum of Understanding (LIGO-M 070064 -00-M)
between the
Eötvös Gravity Research Group (EIRSA, Eötvös University, Budapest, Hungary) (EGRG
and the
Laser Interferometer Gravitational Wave Observatory (LIGO)
March 15, 2007

This Attachment OUT to the Memorandum of Understanding LIGO-M 070064 -00-M defines the role of the **Eötvös Gravity Research Group (EIRSA, Eötvös University, Budapest, Hun** as a Member of the LIGO Scientific Collaboration (LSC) in support of Educational and Outreach to the broader community. The period of performance for the activities in this Attachment is from March 15, 2007 to August 15, 2007.

1. Education and Outreach - As a frontier physics effort, LIGO offers a unique opportunity to inspire interest in science among students and to educate the broader community. The LIGO Laboratory supports a broad program of education and outreach to take advantage of these opportunities. Activities to attract and educate visitors take place at both Observatories, as well as the development of educational materials for use there and elsewhere. The LIGO Laboratory is building a Science Education Center at the Livingston Observatory, and is participating with local partners to make it a vehicle for science education throughout the region. LSC groups are invited to participate in these activities, and to suggest others, with the goal of leveraging activities to make a greater impact. MOU Attachments define the roles and responsibilities of groups in this development group.

2. During the period March 15, 2007 to August 15, 2007, the members of **EGRG** will participate in Education and Outreach in the following areas:

a) Educational Materials Developed

Members of the EGRG group developed of a comprehensive video/flash/picture archive of physics experiments for teachers. LIGO related demonstrations shall be added to enrich this already substantial web-resource.

A virtual tour of the LIGO observatories shall be prepared and posted as a web resource.

A new textbook 'Extragalactic Astrophysics' by Frei, shall include significant coverage on gravitational waves.

b) Other Contributions

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 **EGRG** 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) Access to educational materials and information developed by the LIGO laboratory
Access to the LIGO laboratories for educational projects (within reason, without disturbing operations)

4. Coordination and Reporting -

EGRG 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 with the LIGO Observatories Educational and Outreach Leaders. 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

Zsolt Frei
Principal Investigator

Eötvös Gravity Research Group (EIRSA, Eötvös University, Budapest, Hungary)

David Reitze
LSC Spokesperson

**Attachment Number Z to the
Memorandum of Understanding (LIGO-M **070064** -00-M)**

between the

Eötvös Gravity Research Group (EIRSA, Eötvös University, Budapest, Hungary)

(EGRG

and the

Laser Interferometer Gravitational Wave Observatory (LIGO) Laboratory

This Attachment to the Memorandum of Understanding LIGO-M **070064** -00-M lists the coordinates of members of the **Eötvös Gravity Research Group (EIRSA, Eötvös University, Budapest, Hungary)** who will participate in the LIGO Scientific Collaboration (LSC) as members of LIGO Development Groups. The period of performance for the activities in this Attachment is from March 15, 2007 to August 15, 2007. This period may be modified by agreement to a revision of this Attachment. This list may be extended by agreement to a revision of this Attachment.

Principal Investigator

First Name: **Zsolt**

Last Name: **Frei**

Affiliation: **EIRSA, Institute of Physics, Eötvös University, Budapest, Hungary**

Address: **Pázmány P. s. 1/A**

City: **Budapest**

State: -

Zip Code: **H-1117**

Country: **Hungary**

Primary Email: **frei@alcyone.elte.hu**

Job Title: **associate prof.**

Secondary Email: **frei@zsolt-frei.net**

Phone Number: **+36-1-372-2767**

Fax Number: **+36-1-372-2753**

Begin Date: **Mar 25, 2007**

End Date: **Aug 15, 2007**

Research FTE: **50 %**

LIGO FTE: **100 %**

Author on LSC papers:

LSC Council Delegate?

Member #2

Select this box if the contact information of this member is the same as that of the Principal Investigator.

First Name: **Peter**

Last Name: **Raffai**

Affiliation: **EIRSA, Institute of Physics, Eötvös University, Budapest, Hungary**

Address: **Pázmány P. s. 1/A**

City: **Budapest**

State: -

Zip Code: **H-1117**

Country: **Hungary**

Primary Email: **praffai@bolyai.elte.hu**

Job Title: **grad. student**

Secondary Email:

Phone Number: **+36-1-372-2767**

Fax Number: **+36-1-372-2753**

Begin Date: **Mar 25, 2007**

End Date: **Aug 15, 2007**

Research FTE **100 %**

LIGO FTE **100 %**

Author on LSC papers:

LSC Council Delegate?

Member #3

Select this box if the contact information of this member is the same as that of the Principal Investigator.

First Name: **Bence**

Last Name: **Kocsis**

Affiliation: **EIRSA, Institute of Physics, Eötvös University, Budapest, Hungary**

Address: **Pázmány P. s. 1/A**

City: **Budapest**

State: -

Zip Code: **H-1117**

Country: **Hungary**

Primary Email: **bkocsis@complex.elte.hu**

Job Title: **grad. student**

Secondary Email:

Phone Number: **+36-1-372-2767**

Fax Number: **+36-1-372-2753**

Begin Date: **Mar 25, 2007**

End Date: **Aug 15, 2007**

Research FTE **50 %**

LIGO FTE **100 %**

Author on LSC papers:

LSC Council Delegate?

Member #4

Select this box if the contact information of this member is the same as that of the Principal Investigator.

First Name: **Zoltan**

Last Name: **Haiman**

Affiliation: **Columbia University (affiliated with EIRSA, Budapest, will spend sabbatical in Hungary)**

Address: **Columbia University, CAL, Pupin Laboratories**

City: **New York**

State: **NY**

Zip Code: **10027**

Country: **United States**

Primary Email: **zoltan@astro.columbia.edu**

Job Title: **assitant prof.**

Secondary Email:

Phone Number: **212-854-6822**

Fax Number:

Begin Date: **Mar 25, 2007**

End Date: **Aug 15, 2007**

Research FTE **15 %**

LIGO FTE **100 %**

Author on LSC papers:

LSC Council Delegate?

Member #5

Select this box if the contact information of this member is the same as that of the Principal Investigator.

First Name: **Szabolcs**

Last Name: **Márka**

Affiliation: **Columbia University (affiliated with EIRSA, Budapest, will spend sabbatical in Hungary)**

Address: **Columbia University, CAL, Pupin Laboratories**

City: **New York**

State: **NY**

Zip Code: **10027**

Country: **United States**

Primary Email: **smarka@phys.columbia.edu**

Job Title: **assistant prof.**

Secondary Email:

Phone Number: **212-854-8209**

Fax Number:

Begin Date: **Mar 25, 2007**

End Date: **Aug 15, 2007**

Research FTE **5 %**

LIGO FTE **100 %**

Author on LSC papers:

LSC Council Delegate?

Member #6

Select this box if the contact information of this member is the same as that of the Principal Investigator.

First Name: **István**

Last Name: **Szapudi**

Affiliation: **IfA, University of Hawaii (affiliated with EIRSA, Budapest, will spend sabbatical in Hungary)**

Address: **Pázmány P. s. 1/A**

City: **Honolulu**

State: **HI**

Zip Code: **96822**

Country: **Hungary**

Primary Email: **szapudi@ifa.hawaii.edu**

Job Title: **associate prof.**

Secondary Email:

Phone Number: **808-956-6196**

Fax Number:

Begin Date: **Mar 25, 2007**

End Date: **Aug 15, 2007**

Research FTE **15 %**

LIGO FTE **100 %**

Author on LSC papers:

LSC Council Delegate?

Member #7

Select this box if the contact information of this member is the same as that of the Principal Investigator.

First Name: **Zoltán**

Last Name: **Raics**

Affiliation: **EIRSA, Institute of Physics, Eötvös University, Budapest, Hungary**

Address: **Pázmány P. s. 1/A**

City: **Budapest**

State: **-**

Zip Code: **H-1117**

Country: **Hungary**

Primary Email:

Job Title: **research scientist (Instrumentation)**

Secondary Email:

Phone Number: **+36-1-372-2767**

Fax Number: **+36-1-372-2753**

Begin Date: **Mar 25, 2007**

End Date: **Aug 15, 2007**

Research FTE **100 %**

LIGO FTE **100 %**

Author on LSC papers:

LSC Council Delegate?

Member #8

Select this box if the contact information of this member is the same as that of the Principal Investigator.

First Name: **Gergő**

Last Name: **Fejős**

Affiliation: **EIRSA, Institute of Physics, Eötvös University, Budapest, Hungary**

Address: **Pázmány P. s. 1/A**

City: **Budapest**

State: -

Zip Code: **H-1117**

Country: **Hungary**

Primary Email: **geg@ludens.elte.hu**

Job Title: **diploma student (theory)**

Secondary Email:

Phone Number: **+36-1-372-2767**

Fax Number: **+36-1-372-2753**

Begin Date: **Mar 25, 2007**

End Date: **Aug 15, 2007**

Research FTE **35 %**

LIGO FTE **100 %**

Author on LSC papers:

LSC Council Delegate?

Member #9

Select this box if the contact information of this member is the same as that of the Principal Investigator.

First Name: **Gábor**

Last Name: **Gelencsér**

Affiliation: **EIRSA, Institute of Physics, Eötvös University, Budapest, Hungary**

Address: **Pázmány P. s. 1/A**

City: **Budapest**

State: -

Zip Code: **H-1117**

Country: **Hungary**

Primary Email: **gaborg@elte.hu**

Job Title: **student, physics and informatics**

Secondary Email:

Phone Number: **+36-1-372-2767**

Fax Number: **+36-1-372-2753**

Begin Date: **Mar 25, 2007**

End Date: **Aug 15, 2007**

Research FTE **65 %**

LIGO FTE **100 %**

Author on LSC papers:

LSC Council Delegate?

Member #10

Select this box if the contact information of this member is the same as that of the Principal Investigator.

First Name: **Gábor**

Last Name: **Szeifert**

Affiliation: **EIRSA, Institute of Physics, Eötvös University, Budapest, Hungary**

Address: **Pázmány P. s. 1/A**

City: **Budapest**

State: -

Zip Code: **H-1117**

Country: **Hungary**

Primary Email: **elastone@elte.hu**

Job Title: **student, physics and informatics**

Secondary Email:

Phone Number: **+36-1-372-2767**

Fax Number: **+36-1-372-2753**

Begin Date: **Mar 25, 2007**

End Date: **Aug 15, 2007**

Research FTE **65** %

LIGO FTE **100** %

Author on LSC papers:

LSC Council Delegate?

Authorship:

Frei

Raffai

Raics

Kocsis

Scientific Collaboration Council Delegate(s):

Frei

Kocsis

Approved:

Zsolt Frei

Jay Marx

LIGO Laboratory Director

Principal Investigator(s)

Eötvös Gravity Research Group (EIRSA, Eötvös University, Budapest, Hungary)

David Reitze

LSC Spokesperson