

## LIGO SCIENTIFIC COLLABORATION CHARTER

LIGO M980279-05

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The goal of the charter is to establish the functions and organizational structure of the LIGO Scientific Collaboration (LSC), to identify its responsibilities, to set guidelines for the role the Collaboration will play in the scientific research and operation of the LIGO and other LSC detectors and for the release of scientific results, and to delineate its relationship with the LIGO Laboratory. The LSC and the LIGO Laboratory together make up LIGO.

**LSC Mission:** The LIGO Scientific Collaboration (LSC) is a self-governing collaboration seeking to detect gravitational waves, use them to explore the fundamental physics of gravity, and develop gravitational wave observations as a tool of astronomical discovery. The LSC works toward this goal through research on, and development of techniques for, gravitational wave detection; and the development, commissioning and exploitation of gravitational wave detectors. No individual or group will be denied membership on any basis except scientific merit and the willingness to participate and contribute as described in this Charter.

**LSC Responsibilities:** The LSC is the entity within LIGO that carries out LIGO's scientific research program. Memoranda of Understanding between member groups and the LIGO Laboratory establish the individual group responsibilities to allow the LSC to perform the following functions:

- a. establish the overall data analysis strategy, goals, and timeline, and carry out the data analysis program
- b. identify priorities for research and development, and carry out the R&D program
- c. carry out an outreach program to communicate LIGO's activities and goals to the public, and to provide educational opportunities for young people
- d. disseminate the results of the data analysis program and the R&D program
- e. participate in the scientific operations of the LIGO detectors
- f. perform internal evaluation of progress in data analysis and R&D, making adjustments as necessary

In support of the above activities, the LSC (together with the LIGO Laboratory) makes presentations to funding agencies on the level of effort required to support the various elements of the research program, and presents the rationale for the program before advisory, oversight, and review bodies concerned with LIGO.

**LIGO Laboratory Responsibilities:**

The LIGO Laboratory has the ultimate responsibility for the Observatories, under a cooperative agreement between Caltech and the National Science Foundation. It operates the Observatories and the Caltech and MIT Campus Laboratories, manages the construction and commissioning of new instruments, and provides the administrative and fiscal support for observatory operations as well as administrative support for the LSC.

## Relationship between the LSC and the Lab Responsibilities

Because the success of LIGO depends upon the efforts of both, the LSC and the LIGO Laboratory will work in a mutually supportive fashion to accomplish LIGO's goals. Scientists and engineers at the LIGO Laboratory will participate fully as members of the LSC in the entire LSC program. The LIGO Laboratory will make full use of the talents of LSC members at non-Lab institutions in carrying out the Lab's responsibilities for operation of the instruments and for the development of new instruments.

As described in the Lab Charter [after it is amended], the LIGO Directorate will consist of the Director and the Deputy Director of the Laboratory and the Spokesperson of the LSC. The LSC reports to the NSF through the LIGO Directorate, and will be reviewed annually by the NSF external panel as part of the LIGO Laboratory review. The LSC will produce an annual work plan and report that will be submitted to the LIGO Directorate and subsequently be part of the LIGO Annual Report and Work Plan.

The LIGO Directorate will be ex officio members of all planning and evaluative bodies of the LSC. Representatives of the LSC will serve as technical advisors to the LIGO Oversight Committee. Representatives of key LSC stakeholder institutions will serve as members of the LIGO Oversight Committee.

To support the Laboratory in its operation of the Observatories, the LSC will offer guidance on issues involving scientific tradeoffs in operations:

- a) the optimization of the scientific returns in the operation of the LIGO Laboratory facilities;
- b) the relative distribution of observing and development time at LSC gravitational wave detectors;
- c) priorities for improvements in the LIGO facilities;
- d) the timing and readiness of major instrumentation changes in the long baseline system.

The LSC is expected to contribute to the complete range of tasks associated with the effort to meet LIGO's goals. Specific responsibilities will be agreed to in the Memoranda of Understanding between groups and the LIGO Lab; the objective is that LSC members in and outside of the LIGO Laboratory will share fairly in these efforts. All Memoranda of Understanding between member groups and the LIGO Lab will be co-signed by the LSC Spokesperson.

Since the LSC's responsibilities form a key part of the overall LIGO program, the LIGO Program Advisory Committee will also advise the LSC in carrying out those responsibilities.

The LSC can include gravitational wave detectors in addition to those in the LIGO Laboratory via appropriate MoUs with LIGO. Relationships with groups, or collaborations, around these additional detectors can be established to support the sharing of instrument science and astrophysical exploitation of the combined detector array. The anticipation is for full sharing of obligations and privileges among all LSC participants; more limited arrangements for cooperation with external detectors and collaborations are handled through MoUs with the LIGO Laboratory. Consistency with LSC rules is ensured by the LSC presence in the LIGO Directorate.

Through such a Memorandum of Understanding between GEO and LIGO, all members of GEO are members of the LSC and the GEO600 interferometer is operated as an LSC detector.

## **Organizational Structure of the Collaboration:**

Membership in the LSC is by groups, affiliated with institutions. Memoranda of Understanding (MOUs) between groups and LIGO, with regularly updated attachments, establish the commitments. Individuals in the group have the rights and obligations of membership as indicated in this Charter and the Bylaws.

The Collaboration Council, with proportional representation from each group, votes on issues of importance to the collaboration, and elects the Spokesperson and others in the organizational structure of the collaboration. The Collaboration Spokesperson leads this body and has the responsibility for the proper functioning of the LSC and to represent it to the outside world.

The Executive Committee acts as a proxy for normal Council responsibilities (except Bylaw and Charter changes) between Council meetings, and has additional responsibilities as laid out in the Bylaws. The actions of the Executive Committee are to be reviewed at the subsequent Council meeting. The Executive Committee is composed of elected members, members appointed by the Spokesperson and the LIGO Laboratory Directorate, and representatives of stakeholder institutions. A committee established by the Executive Committee reviews the MOUs, and ensures that the LSC program is complete and efficient.

LSC is responsible for reviewing and approving the presentation and publication of all major results of LSC research. It will adopt a Publication and Presentations policy and maintain appropriate review and approval mechanisms. Authorship rights on LSC-wide publications are determined on an individual basis through discussion between the PI of each group and the LSC Spokesperson.

Other committees guide the analysis effort, observatory operations, future detector development, and elections.

Collaboration members come together in self-organized Working Groups to address specific needs and interests as necessary.

Please see the Bylaws for details on the functioning of these entities.

Adoption and subsequent modification of the Charter requires a 2/3 majority vote of those present at a duly-called Council Meeting. Adoption and subsequent modification of the Bylaws requires a majority vote at a Council Meeting.