



LIGO SCIENTIFIC COLLABORATION PUBLICATION AND PRESENTATION POLICY

February 2018

1. Introduction

The LIGO Scientific Collaboration (LSC) is responsible for the data analysis, validation, scientific interpretation and publication of scientific results derived from LIGO data. The LSC also has the function of prescribing the technical program for the improvements in the LIGO detector.

Access to the LIGO data is defined in the Memoranda of Understanding between the LIGO Laboratory and the LSC member's institution. Broadly, rights to LIGO data are gained by making a substantial and recognized contribution to LIGO designs, construction, commissioning and/or software development. By signing a Memorandum of Understanding, the participating LSC institution agrees to abide by the LSC publication policy.

The purpose of the LIGO/LSC Publication and Presentation Policy is to:

1. Assure scientific integrity of LIGO scientific and technical results
2. Assure appropriate recognition of individual and institutional contributions

The goals in formulating the policy are to:

1. Promote the timely publication of results
2. Promote the visibility of LIGO scientists and engineers, and especially, to encourage younger scientists and engineers to participate in the presentation and publication of results.
3. Provide an efficient mechanism for the internal review and be conducive to publication.
4. Promote open and free exchange of ideas and information within the LSC while research projects are being formulated and carried out.

During the course of free scientific exchange in a collaborative effort involving multiple institutions, privileged information is disseminated. It is the intent of this policy to insure that members of the LSC can present their work in an environment where that privilege is preserved.

LSC reviews are intended to provide a constructive evaluation of publications by the LSC and its participating institutions.

This policy applies to collaborative work of the LSC carried out in the LSC committees and working groups as it bears on the scientific mission of the LSC. Work originating in the individual groups of the Collaboration that is not part of the collaborative program, not significantly influenced by interactions in LSC committees, working groups, or collaboration meetings, or not specifically identified in the Memorandum of Understanding is not subject to the policy. The policy applies to scientific articles, presentations at conferences, press releases and other popularizations.

Publications and presentations will be made in concurrence with the LIGO Laboratory Directorate.

As a provision of the LSC bylaws, a Publication and Presentation (P&P) Committee is appointed by the LSC spokesperson in order to:

- manage the reviews of LSC technical publications and conference proceedings
- manage reviews of abstracts and presentations at conferences
- maintain a public archive of publications and presentations
- provide a single point of contact for conference organizers
- assign speakers for talks on behalf of LSC at conferences
- maintain the publication and presentation policy

2. Authorship

2.A The LSC Author List

1. The author list of the scientific publications of LSC observations will include all members of the LIGO Scientific Collaboration who have earned that status. The author list will be alphabetical and will include engineers and technicians who have contributed in an important way to the design, construction, installation, commissioning and operation of the detectors and of major LSC facilities. The nominal goal of the specific implementation described in 2 is that LSC members earn author status by devoting at least 50% of their research effort to the LSC for a period of approximately one year. Once earned, authors retain their status for approximately one year after they leave the collaboration (in good standing) or after the LSC portion of their research falls below 50%.
2. The Elections and Membership Committee (EMC) of the LSC will publish new versions of the author list twice each year, on February 15 and August 15. Each list will be assembled from information provided by an individual in each LSC institution designated as the author contact (typically the PI). Individuals meeting the following criteria will be included:¹

The August list will contain the names of current LSC members who joined the LSC prior to Dec 15 of the previous year and who have devoted more than 50% of their research effort toward LIGO since that date. It will also contain the names of past LSC members who had earned authorship but have left the collaboration (or whose research effort fell below the 50% level) after Aug 15 of the previous year.

The February list will contain the names of current LSC members who joined the LSC prior to June 15 of the previous year and who have devoted more than 50% of their research effort toward LIGO since that date. It will also contain the names of past LSC members who had earned authorship but have left the collaboration (or whose research effort fell below the 50% level) after February 15 of the previous year.

Each list will be approved by the Spokesperson, who may consult with others to arrive at an equitable decision. Papers written for the full LSC will use the most recent list published by the EMC at the time of their initial submission to the LSC for review. The author list will be alphabetical.

¹ The specific dates chosen in this implementation ensure that no member of the collaboration has to wait longer than 14 months to appear on the author list, and no member will join the author list with less than 8 months of participation (a six month window skewed slightly in favor of new authors). For authors leaving the LSC, the minimum time authorship is retained is 12 months and the maximum is 18 months (again a six month window skewed slightly in favor of authors leaving the collaboration). Since a large number of LSC members' appointments are synched to an academic year beginning in September, it is expected that the extremes in these ranges will be realized relatively rarely.

3. The addition to the author list of LSC members who have less than 50% of their research effort committed to the LSC for special reasons should be brought up to the spokesperson for approval. The addition of such members to the author lists will be valid until the LSC membership status of the person in question changes, and does not need to be reviewed before the publication of each biannual author list.
4. Any special arrangements or conflicts concerning authorship should first be brought to the attention of the author contact from the relevant group (typically the PI) who can bring them to the EMC. The EMC will make a recommendation to the LSC Spokesperson, who will make the final decision, consulting with others as needed. Any conflicts on authorship on LIGO publications will be resolved by the Spokesperson in consultation with the LSC Executive Committee and the Laboratory Directorate.
5. Individuals who have made significant contributions to a particular observational paper, but who are not on the LSC author list, may be added to the author list of that paper. To add an author, his/her name should be proposed for authorship by the Analysis Group when presenting the paper to the LSC Executive Committee for final approval. Consent of the LSC Executive Committee is required.
6. Individual LSC members eligible for authorship may request their names not to be included in specific papers. This request will not be interpreted as a statement that the member does not endorse the paper or the science it represents, unless that reason is explicitly stated.

2.B Archival Journals

1. All archival journal papers reporting on LIGO and GEO observations and astrophysics results shall list all eligible LSC members (the “LSC author list”) as authors. The author list shall be in alphabetical order. If a corresponding author appears in the final journal article, it should be “LSC spokesperson” (lsc-spokesperson@ligo.org), without any specific name attached to the address.
2. Every paper authored by the LSC will be accompanied by an “outreach abstract”: a short text, written in a language suitable for the general public, which complements the paper’s scientific abstract.
3. While many results coming from the LSC will involve the use of data from the LIGO and GEO detectors, much of this work will not directly report on observations or gravitational wave astrophysics. Technical and/or methods papers based on the work of a subset of LSC members using instrumental data shall list all eligible LSC members (the “LSC author list”) as authors. However, in keeping with the goal of the LSC to promote the visibility of its members to the scientific community at large, there may be cases where a limited author list is more appropriate. The publication policy therefore allows for exceptions to this rule.

The primary authors can petition to the P&P committee for a limited author list of those individuals whose work substantially contributed to the paper. Examples of such papers would include, but are not limited to, papers covering investigations on:

- algorithm development with playground data
- veto studies
- hardware injections
- calibrations

The petition process should be initiated before the paper is written, when possible, by contacting the P&P committee with an outline of the paper, a description of the data used and the results drawn. In some cases, the details of the writing may be needed for a final judgment.

As a general guideline:

- Old data, already analyzed by the search groups and declared to be playground by the LSC Spokesperson, can be used to test analysis techniques. The corresponding short-authorlist papers shall contain no new observational results; efficiencies and estimates of background with unphysical time-shifts between sites are allowed.
- Veto, hardware injection, and calibration papers that need more recent data shall be allowed a short authorlist if the scope of the paper is methodological and not a statement on the performance of the instruments in a science run.

Decisions on whether a petition is granted will rest with the P&P committee, in consultation with the Spokesperson. In some cases, instead of granting a limited author petition, the Spokesperson may decide to alter the alphabetical authorship listing by putting the main authors at the front of the list, followed by the remainder of the LSC author list.

A brief written record of the reasoning for such exceptions will be posted on the LSC Publication and Presentation committee WEB pages.

If the petition is granted, the paper shall contain an acknowledgment to the LSC for access to the data and the statement of acknowledgment to the funding agencies.

4. Certain projects carried out on the LIGO interferometers are related specifically to commissioning and/or improving detector performance or to exploring instrumental physics that falls outside the realm of the LSC mission. Papers that fall into this category derive from the work of two groups – a set of researchers (Group 1) who conceived and implemented the core research project (typically but not necessarily a small number) and a much larger group of people who built, maintain, and operate the interferometers that enabled the project to be carried out (Group 2).

For these classes of papers, the authorship is assigned as follows. Group 1 authors are listed first in the byline in an order determined by the Group 1 authors, followed by Group 2 authors listed alphabetically. The Group 2 author list consists of scientists, engineers, and technicians who made tangible contributions to the design, development, installation, commissioning, and operation of the interferometers. The Group 2 author list will be maintained by the LIGO Laboratory Operations Management Team and will include any eligible members of the LSC.

5. Technical papers originating from individual or collaborating LSC institutions shall assign authorship in accordance with generally accepted principles. Specifically, authorship rights shall be assigned to a paper based upon their participation in the work. Obviously, individual groups have the responsibility of properly determining authorship for their papers.
6. In some cases, technical papers originating from a specific working group or involving collaborations between multiple working groups may have a large number of authors. In such cases, the proposed author list shall be drawn up by the corresponding author and circulated to all working group members, who may contact the corresponding author if they consider their name to be inappropriate for the author list or to have been missed in the preliminary listing. A final list shall be generated and re-circulated for a final check before submission to the LSC for review.

7. Should the author list exceed the typical size of a working group (roughly 40-50 authors, or 10% of the LSC membership), then the paper can reasonably be said to represent the entire LSC in that it significantly advances data analysis or advanced detector development. In this case, all current eligible LSC members will be listed as authors. Exceptions may be made when, for example, two working groups collaborate on a paper with a narrow focus, or in the case described above in 4.

2.C Conference Proceedings and Review Articles

1. The authorship of conference proceedings reporting on previously published LIGO observations and observational results need only list the speaker as the author and state that he/she is writing for the LIGO Scientific Collaboration in the byline, e.g., “J. Speaker for the LSC”.
2. In some cases, the collaboration may decide to publish as a conference proceeding an astrophysics or observational result that will not be published elsewhere. In this case, the paper should have full author list and should be reviewed as an observational paper.
3. Review articles that do not use proprietary LIGO data and only cite public-domain results, such as could be written by a gravitational wave expert outside the LSC, shall carry a short author list.
4. The authorship of conference proceedings reporting on technical and/or methods papers involving LSC instruments and data should follow the same rules as for archival journal, with either a few author lists (if a petition is granted by the P&P committee as in 2.B.2) or the byline. “J. Speaker for the LSC”.
5. Technical conference papers originating from individual or collaborating LSC institutions not using LSC instrumental data shall assign authorship in accordance with generally accepted principles.

3 The LSC Publication Review Process

The LSC publication review is meant to provide constructive feedback to authors, as well as to ensure the authorship is appropriate and the LSC work is properly represented. The review process is managed by the P&P committee. This policy document lists the triggers for a review and general guidelines; detailed procedures and timelines from the P&P committee are outlined in the DCC document LIGO-M060334 (most recent version).

3.A Triggers for an LSC review

1. The group leader of any participating LSC institution, including the LIGO Laboratory, has primary responsibility for determining when a scientific work should be submitted to the LSC for review. The group leader here is defined as the signatory on the LSC Memorandum of

Understanding or the Director of the LIGO Laboratory. This determination must be made prior to submission for publication or posting on any public archive (e.g., LANL gr-qc, arXiv).

2. If the work in question satisfies any of the following criteria, then it must be submitted to the P&P committee for further evaluation.

(i) It involves data from an LSC instrument, be it the detectors or physical monitors.

The rationale for this is as follows. Whenever an LSC member writes a paper that contains a performance measure of an LSC detector or planned/proposed detector (such as an $x(f)$ or $h(f)$ graph), or mentions specific technical specifications of the detector, a reader might reasonably consider that the author is speaking for the collaboration. Thus, such papers, regardless of institutional authorship or other considerations, should go through the LSC review process.

Examples falling into this category include, but are not limited to, data from PEM channels of the LIGO detectors, previously unreleased or unpublished detector noise spectra, and astrophysical data from the GEO detector. Examples of LSC instruments include the LASTI facility, the Caltech 40m interferometer, and the Gingin interferometer. In addition, any detector improvements fall into this category.

It is conceivable that papers published by LSC institutions may use $h(f)$ or $x(f)$ data which have already been published in the open literature and do not satisfy any other of the criteria listed by the LSC publication policy. In this case, the P&P committee may decide to waive an LSC review for the paper in question.

(ii) It was significantly influenced by interactions with the LSC or is an MOU-defined activity.

This includes committees, working groups, collaboration meetings, or other interactions with members of the LSC outside the authors' research group(s). Certain review articles and any work defined in attachments to Memoranda of Understanding or claimed as LSC work in an MOU review or in a proposal submission falls into this category.

(iii) It has used LSC software or hardware resources for the analysis of data from an LSC instrument, for the design of a future LSC instrument, or for other purposes that bear directly on the mission of the LSC.

Examples falling into this category include, but are not limited to, DMTs, LDAS, and LAL software analysis tools, software tools developed for design of interferometer configurations such as e2e, FFT, Melody, Bench. Also included are research efforts in which the LIGO Lab or LSC institutions have contributed significant resources for the purposes of collaborative LSC research. Examples include but are not limited to optical coating and substrate development efforts, LSC laser development programs, and control system development. Any work performed under the auspices of direct funding from LIGO Laboratory or from joint funding with LIGO Lab and/or LSC institutions that is influenced in some way by interactions in LSC committees, working groups, or collaboration meetings is also subject to the policy.

(iv) It presents results or contains statements that can reflect on the LSC.

LSC colleagues should have an opportunity to comment on factual statements made about LSC results or instruments. Whether these papers need a review by the LSC will be at the discretion of the Publications and Presentations committee chair. As always for short authorlist papers, the authors are under no obligation to follow the suggestions. Examples in this category include review articles which discuss LIGO results or performance.

3. Even when these criteria are not explicitly satisfied, the LSC group leader is encouraged to consult with the LSC P&P committee on the question of the need for an LSC review when there is a question concerning the applicability of an LSC review. Every effort will be made to have the LSC process add value to the paper without introducing delays.

3.B Procedures for Review

1. Using the above guidelines, if the determination is made that an LSC review is necessary, a member of the participating LSC institution may initiate the preparation of a manuscript for publication. The initiating author(s) will inform the P&P committee of their intent. The initiating authors will provide a general outline of the manuscript and a proposed author list. The P&P committee may request that the initiating authors present an outline of the manuscript at a Collaboration meeting. For technical papers not involving observations or observational results, this step is considered optional.
2. When a manuscript is near ready for publication, it will be submitted to a reviewer or set of reviewers within the Collaboration selected by the LSC P&P committee. The reviewer(s) confirms the most important results presented in the manuscript and provides comments on the content and recommendations on the authorship.
3. When the paper is submitted, it will be listed on a public LSC database maintained on the LSC home page listing the title of the paper, author list, date and time of submission, and date of completed LSC review. The reviewer(s) will provide feedback to the authors within **one weeks** of receipt of the manuscript.
4. Concurrent with review by selected LSC members, the manuscript will be posted electronically on a secure, password protected web site for general LSC review. A notification will be sent to all LSC members announcing the title, author list, and deadline for receiving comments. Members of the LSC will also have **two weeks** for full collaboration papers and a minimum of **one week** for short-authorlist papers to log their comments on the relevant page of the PnP system.
5. In the event of disagreement amongst the reviewers or between the reviewers and the authors, the issue is to be resolved by the Spokesperson who may choose to bring it to a vote of the Collaboration Council, or of the Executive Committee on behalf of the Council.
6. The P&P committee in consultation with the review committee will approve the final version of the manuscript prior to submission.

3.C Guidelines for authors

1. Authors are strongly encouraged to submit papers for LSC review only after they are in a 'publishable' state. Premature or incomplete "work-in-progress" drafts will cause unnecessary delays and use up goodwill on the part of the reviewers.
2. Submissions to the LSC P&P committee include information regarding the target journal(s).
3. To aid the P&P committee, authors are encouraged to suggest appropriate reviewers within the LSC. The P&P committee in turn will inform the authors who the reviewers are.

3.D Guidelines for reviewers

1. Reviewers will be selected by the P&P committee based on expertise on the topic of the submitted preprint and on the number of LSC reviews the potential reviewer has already carried out for the LSC. This is meant to ensure that burden of peer review is spread most evenly across LSC members.
2. Reviewers are strongly encouraged to complete reviews within 7 calendar days and will be given a strict 14 day period in which the review must be completed.
3. The review should evaluate the following criteria, in addition to the scientific relevance and correctness of the work:
 - Is the author list appropriate?
 - Does the reviewer wish to re-review the paper after reviewer's recommendations are addressed by the authors? If yes, there must be a three day turnaround time.
4. Reviewer's comments should be forwarded to authors for incorporation into the submission.

4 Presentations (talks and posters)

The P&P committee manages the distribution, review and archival of LSC presentations. Detailed P&P review procedures and timelines are outlined in the DCC document LIGOM060334 (most recent version). The remainder of this section outlines some specific guidelines for invited and contributed talks/posters.

4.1 Only public observational results or results that have been approved by the Collaboration Council, at either a Collaboration meeting or through polling the Collaboration by e-mail, or by the Executive Committee, on behalf of the Collaboration Council, may be shown publicly at invited talks and appear in proceedings. The preference is that the results will have been written and reviewed as for publication

4.2 Talks (and subsequent proceedings) presenting status of the LIGO instruments, statements about new and anticipated observational results, plans for data taking runs, the LSC data analysis policies and talks displaying the LSC or LIGO logo will be presented on behalf of the LSC. Respectively, the line "on behalf of the LIGO Scientific Collaboration" should be displayed on the title page of the talk.

4.3 The distribution of talks among the LSC members is coordinated by the P&P Speakers Board, which provide oversight to the collaboration regarding both the guidelines used in speaker selection and the equitable distribution of talks among the members of the collaboration. The specific responsibilities of the P&P SB are:

- a) to compile and maintain a list advised by working groups with names of potential speakers,
- b) to review the speakers assignment in LSC and develop guidelines for speakers selection, which serve best the members of the collaboration and advances of the LSC physics, and
- c) to solicit new opportunities for conference talks by LSC speakers

4.A Invited

1. Invitations received by a LIGO Scientific Collaborator for talks dealing with the LIGO experiment at a workshop or a conference are regarded as invitations to the Collaboration. Such invitations may not be accepted by members of the LIGO collaboration without a prior approval of the P&P committee. All invitations will be forwarded to the P&P committee. It is preferable that the workshop/conference invitations are sent directly to the P&P committee by the workshop/conference organizers. Following the P&P procedures and the P&P Speakers Board recommendations, the P&P committee will select speakers to present talks on behalf of the LIGO Scientific Collaboration. It is the responsibility of a selected speaker to contact the conference organizers regarding details of the talk and the conference.
2. Invitations received by a LIGO Scientific Collaborator for seminars and colloquia are regarded as invitations to an individual. No prior approval is needed from the P&P committee in order to accept such invitation. Following the P&P policies 4.1 and 4.2, it is at speaker's discretion to present a seminar or colloquia talk on behalf of the LIGO Scientific Collaboration or not. If a speaker elects to present his/her talk on behalf of a small group of authors, no statements on behalf of the LSC are allowed and no LSC logo can be used.

Abstracts of all invited talks will be posted in the DCC and sent to the P&P committee prior to their submission. The slides to be shown will be submitted to the DCC as close to the time of presentation as practical. The P&P committee and relevant LSC working groups should be informed as the slides are posted in DCC. Speakers presenting talks on behalf of the LIGO Scientific Collaboration should obtain a formal P&P approval both for abstracts and talks, prior to their presentation. The P&P approval of all other seminar and colloquia talks is optional. However, the LIGO Scientific Collaborators are encouraged to benefit from the P&P review and ask the P&P committee when in doubt.

4.B Contributed

1. Any member of the LIGO Collaboration may initiate the submission of a technical contribution to a workshop or conference. The initiating author(s) will inform the P&P committee of their intent. The initiating authors will provide a title and an abstract of the talk and a proposed author list.
2. Abstracts of the contributed talks at conferences and workshops will be sent to the P&P committee for posting prior to their submission. The slides to be shown will be submitted to the DCC as close to the time of presentation as practical. The corresponding LSC working groups and the P&P committee should be informed as the slides are posted in DCC. Speakers presenting talks on behalf of the LIGO Scientific Collaboration should obtain a formal P&P approval both for abstracts and talks, prior to their presentation. The P&P approval of all other contributed talks is optional. However, the LIGO Scientific Collaborators are encouraged to benefit from the P&P review and ask the P&P committee when in doubt.

5 Theses

PhD and Master theses that use data differ from publications, as they are, by default, single authors and are bound to a tight schedule that may not be met by the review process. Ideally, an observational result in a thesis should be reviewed to the same standard as an LSC publication.

However, this may conflict with review priorities and potentially introduce unwelcome delays in the graduation schedule. Instead, the following guidelines shall be used:

1. An analysis claiming detection cannot be published in a thesis until an official announcement has been made by the LSC and the LIGO Directorate.
2. When possible, other observational results in a thesis shall be reviewed to the typical standard for presentation of preliminary results at conferences. The fallback scenario, in the case of a controversial analysis, is to only present “playground” results.
The thesis shall also contain a statement of acknowledgment to LIGO, the LSC and to the funding agencies. A statement that results are under LSC review and potentially subject to change may be appropriate.
A written record will be posted by the Publication and Presentation committee on its web pages, together with a statement from the advisor and the review committee chair, listing which data was used, and how.
3. If the thesis does not undergo a review or does not meet the above criteria, a disclaimer shall be added to the introduction, stating that the work does not reflect the scientific opinion of the LSC and it was not reviewed by the collaboration.