

Attachment-A
between
KAGRA and LSC Scientific Collaborations

Agreement for joint technical collaboration

Attachment-A to the Memorandum of Understanding (MOU) between the LIGO, KAGRA and Virgo Scientific Collaboration establishes policies and procedures for technical collaborative work between the LSC and KAGRA collaborations during the construction and commissioning phase of KAGRA and Advanced LIGO. It is anticipated that technical collaborative work will continue in the operations phase through renewing and updating this MOU/attachment.

A separate Attachment-B defines the collaborative data sharing and data analysis policies and procedures between the KAGRA, LIGO and Virgo scientific collaborations prior to scientific data taking. It anticipates policies by which KAGRA will become part of the global network with full data sharing.

This MOU/attachment defines the purpose, scope and collaboration policies for joint technical work on the design, building and commissioning of KAGRA and Advanced LIGO. It anticipates continued collaboration when scientific data taking begins through a renewed and updated agreement.

By signing this attachment, the parties agree that they understand the nature of the collaborative work, consider it to be scientifically worthwhile, and will do their best to bring it to successful completion.

A. Description of Planned Collaborative Work

The goal of the collaborative work defined in this MOU/attachment is primarily aimed at enabling LSC and KAGRA members to collaborate on technical work in the design, construction and commissioning phase of KAGRA and AdLIGO. We anticipate continued collaboration through a renewal of this attachment with appropriate updates.

The purpose of this collaborative work is for both KAGRA and the LSC to benefit from the technical work and expertise of the other group. Such technical collaboration can take two forms:

- 1) LSC members collaborating on the design, installation and commissioning of the KAGRA detector, and the reverse (KAGRA members collaborating on Advanced LIGO installation and commissioning);
- 2) Specific technical tasks or technical responsibilities agreed to between the LIGO Laboratory and KAGRA.

This document addresses collaborative work under item 1) above. For item 2), we anticipate that collaborative tasks using LIGO Lab technical expertise, personnel or other resources will also be valuable in helping implement KAGRA. Agreements for such work between the laboratories will be defined in statements of work in a new attachment to the existing ICRR / LIGO Laboratory MOU.

Collaboration agreements under this MOU/attachment could include consulting and building of equipment for KAGRA or LIGO under the following guidelines:

Each party may share technologies developed by it at the request of the other party. If the developing party agrees to such sharing, any costs of such sharing will be borne by the requesting party. Agreement to share will be on a case-by-case basis and approved by the key personnel for each party. Each instance will be initiated by a requesting letter and confirmed by an accepting letter from the respective collaboration leadership. The software and technologies developed by each party must not be transferred to third parties outside of the collaboration without the prior written agreement of the developing party.

Some LSC scientists may want to join the KAGRA collaboration, while maintaining membership in LIGO LSC. This is possible for LSC members under the policy approved by the LIGO LSC Council, March 21, 2012 (LIGO-M1200043-v3), specifically: 1) An unpublished idea learned from discussions with other LSC members must not be shared with those not in the LSC or in KAGRA, without explicit permission from the LSC member (or members) who conceived the idea; 2) When composing talks, papers and workshop presentations, LSC members should make every effort explicitly to attribute technical contributions, significant ideas, calculations, measurements, and plans to those groups and people from which they originate. This is standard practice in the scientific community. Moreover, the LSC publication and presentation policy T010168 should be followed for all publications and presentations of technical work authored by LSC.

B. Appropriate Use of Technical Information, Data and Other Information

1. All parties agree that any technical information, data or data products received from the other parties shall be used only for the purposes of the collaborative work covered by this agreement, and shall be held confidential (unless already made public).
2. Access to collaboration web sites and/or mailing lists may be granted to facilitate working together. Any information exchanged related to this MOU/attachment A concerning KAGRA and LIGO should be treated as confidential unless it has already been made public. Senior scientists should ensure that all involved persons, including students and technical staff, understand and respect the sensitive nature of the data and information exchanged.
3. The parties acknowledge that any project results (which shall include discoveries, inventions, materials, intellectual property, know-how) developed under the collaboration described in this MOU/attachment shall belong to the party developing these. Each party hereby provides the other party with a non-exclusive license to use these project results for internal, non commercial research and for the purposes of the collaboration. The

project results must not be shared or transferred to third parties outside of the collaboration without the prior written agreement of the developing party.

Publication and publicity for results should meet LSC policy (which is known to both parties), where appropriate. The parties will ensure that, wherever practicable, all publications or other outputs from or related to work performed under the collaboration described in this MOU/attachment shall acknowledge the contributions of each party and the funding sources.

4. Individual LSC members collaborating on KAGRA can collaborate individually on technical problems and perform the work abiding by the rules of both collaborations. In particular, sharing technical information and documents will follow the same rules as established in the general policies of KAGRA and LSC. The aim of the collaboration is to enable forming direct collaborations on technical work and/or sharing of information to the benefit of both KAGRA and LSC. At the same time, we must protect individual innovations, ideas and results that have been discussed within the collaboration, but have not yet been published or made public.

C. Scope and Timeline

1. This MOU/attachment concerns joint LSC and KAGRA technical collaboration during the construction and commissioning phase of KAGRA and Advanced LIGO.
2. Exchange of technical information and participation of individuals during the time period of this MOU/attachment is encouraged and will be carried out under the policies stated in this agreement.
3. Scientific presentations and publications resulting from the work under this agreement will follow the normal oversight and approval mechanisms established in KAGRA and the LSC.

D. Term of the agreement:

This agreement will come into effect beginning at the signing date, and lasting three years from that date. It may be extended by mutual agreement between the KAGRA and LSC scientific collaborations.

Signed by,

Takaaki Kajita, KAGRA PI (Principal Investigator)

Date

Gabriela González, LSC Spokesperson

Date