

Recommendation for the ICFA ILC effort for the ICFA meeting on 29-30 March 2022

ILC International Development Team

Current Status of the Pre-lab effort

The International Development Team (IDT) was created by the ICFA in August 2020 to support the Japanese community proposal to host the ILC in Japan as an international project, by preparing the ILC Preparatory Laboratory (Pre-lab). The Pre-lab will be organised as a collaboration of worldwide laboratories, thus not requiring agreements at the level of government authorities, with the headquarters in Japan. Once the Pre-lab is in place, it will become the focal point of the ILC project.

As expressed by the MEXT minister in February 2021 in his reply during a Diet committee meeting and reiterated in his reply letter to ICFA in May 2021, MEXT considers that approval of the Pre-lab can only be made once the prospect for foreign contributions to the ILC is clarified. The IDT sees, and potential foreign partners agree, that the Pre-lab is just a step in which engineering design work is completed, in parallel with the intergovernmental negotiations for the sharing of the cost and responsibilities for the ILC construction and operation. Only after the successful outcome of the intergovernmental negotiations, could the ILC Laboratory be founded and the construction begun. However, we understand that MEXT has concerns that once the Pre-lab is established it would be very difficult for the Japanese government not to construct the ILC even if insufficient foreign contribution were realised in the intergovernmental negotiation. In their view, just expressing an interest to host the ILC at this moment would put them in a weaker position in the negotiations. The MEXT Advisory Panel for the ILC also concluded that it would be premature to move towards the Pre-lab coupled with a declaration of the interest to host the ILC by the Japanese government as desired by the ILC proponents.

The IDT believes that negotiation of the foreign contributions to the ILC requires the Pre-lab since it will provide a basis for successful intergovernmental negotiation. For this reason, MEXT must be persuaded to decouple the Pre-lab start from the ILC cost sharing issue. A common understanding on the procedure to reach an agreement for the ILC construction needs to be shared among the authorities of potentially interested countries including MEXT. Developing this common understanding requires time beyond the current deadline of the end of 2021 given by ICFA to the IDT. Given this situation, ICFA needs to decide whether to continue to support the realization of the ILC in Japan as an international project.

IDT recommendation

In the opinion of the IDT, the ICFA effort should continue only if the following two conditions are satisfied:

1. There are new prospects for establishing the Pre-lab with minimum delay. Regular interactions among Japanese and foreign government authorities interested in the ILC must start to discuss the general framework such as the organization, governance model and

scheme for the cost sharing. Constructive discussion on those subjects could establish a common understanding that encourages MEXT to proceed towards the Pre-lab.

2. Some of the time-critical Pre-lab work packages can be started soon, such that the delay in the ILC project would be minimized. This requires a substantial increase in the MEXT budget to KEK for ILC R&D that would allow KEK to form collaborations with other laboratories for performing some of the most time-critical work packages. Capability by KEK to provide resources would encourage other laboratories to invest their own resources in collaborative work.

The MEXT Advisory Panel indicates the importance for the government-level interactions to discuss how to realise a large international project, such as the ILC, and recommends the R&D work on the accelerator technology, without referring to the host issue for the time being since that could strongly affect the cost sharing discussion. This is compatible with our recommendation but does not provide sufficiently clear new prospect. The IDT believes that further information from Japan would be needed for the ICFA decision whether to extend the support for the ILC.

In the case of the extension, ICFA needs to carefully monitor the progress with milestones, such as

- by the end of 2022,
 - a significant increase of the ILC R&D budget in Japan, which starts no later than the beginning of the Japanese Fiscal Year 2023 (April), and
 - progress in productive discussion among MEXT and international governmental authorities,
- by the end of 2023,
 - a decision by KEK to start the Japanese process for establishing the Pre-lab, and
 - sufficient progress in the interlaboratory discussion for the Pre-lab start-up.

During the extension period, the following tasks will be necessary:

- coordinate the effort to establish the collaborative R&D work between KEK and other laboratories and to follow progress,
- provide the necessary support for the intergovernmental discussions,
- continue preparations for the Pre-lab start-up along the framework described in the Pre-lab proposal, taking into account feedback from the interested parties, and
- provide an international framework to support the ILC physics and detector activities.

The ICFA could setup a new organisation, or the current IDT could also assume the above-mentioned responsibilities. Progress reports from the IDT (or the new organisation in charge) and KEK should be regularly given to the ICFA so that the progress can be carefully assessed.