

## 欧米の最新の動向について

今般、欧州（仏、独、英）及び米国の5カ国でILCに関する意見交換<sup>※</sup>を実施。意見交換（10月）等を通じて各国のILCに関するスタンスを確認。ポイントは以下の通り。

※日本からは、前回各国と意見交換が行われた2020年以降の動向（有識者による検討や文部科学大臣の国会答弁、文部科学省の有識者会議再開など）について説明。

## 1. 欧州

## 【仏国】

- ・現在、国内のロードマップを改訂中（2022年に公表予定）。また、欧州研究インフラ戦略フォーラム（ESFRI）ロードマップも改訂中（2021年末に公表予定）。これらに ILC 計画が含まれることはない。
- ・財政面では、様々な国際的なプロジェクトへの対応により非常に厳しい状況。このため、現時点で ILC への投資は全く考えていない。
- ・FCC についても慎重に見ている。複数提案のあるヒッグスファクトリーについて国際的な議論が必要。

## 【独国】

- ・ILC 計画の科学的可能性は認める。準備研究所を含め ILC 計画をさらに議論するためには、コスト面のより明確な情報が必要。国内の財政的余力はほとんどない。
- ・国内ロードマップの改訂が来年開始（2024年に公表予定）。独国に相当の負担が期待されるのであれば、ロードマップに組み込まれることが必要。
- ・ホスト国による ILC 計画への優先順位付けがない中で、ILC 計画を独国内で優先することは難しい。

## 【英国】

- ・最新の欧州素粒子物理戦略に基づく既存プロジェクトが優先。他国と同様に、英国の財政事情も、コロナ対策によりひっ迫。
- ・11月に予算審査プロセスがあり、今後3年の政府予算が決定。日本が ILC を進める意思を明示することは、英国にとって役立つだろう。
- ・国内ロードマップを改訂中。ILC は将来参加するかもしれないプロジェクトであるが、現状では ILC を議論することは大変難しい。

## 2. 米国

- ・日本の誘致表明を前提に準備研究所段階に進むことを引き続き支持。準備研究所期間中に、国際費用分担などの課題を議論。
- ・米国の貢献度のより詳細な検討や米国内予算プロセスのためにも、ホスト国がリードし、国際協力の下での準備研究所プロセスの開始が必要。
- ・政府間協議を進めるための枠組みとして、IDT 提案書に示された枠組や、政府と関係機関で構成される暫定会議が考えられる。

## Summary of the Exchange of opinions between MESRI/BMBF/BEIS/STFC/DOE and MEXT related to ILC

1. Date: October 15<sup>th</sup>, 2021

2. Venue: online video conference (Webex)

3. Participants

MEXT (Japan), MESRI (France), BMBF (Germany), BEIS (UK), STFC (UK), DOE (US)

4. Meeting summary

(1) Participating countries' situations and positions related to the ILC project

- The participants explained their countries' situations and shared understanding of the position of each country related to the ILC project.

[Japan]

- ✓ MEXT described recent status of the ILC project, update after the latest exchange of information (during years 2020 and 2021), which included the Science Council of Japan (SCJ) publishing its Master Plan 2020 but the ILC was not selected as a priority large-scale research project, and MEXT formulating its Roadmap 2020, where the ILC community withdrew the project application in March 2020.
- ✓ MEXT restarted the review of the ILC Advisory Panel based on the IDT's proposal and Japanese ILC community report related to ILC project, considering recent discussions on large-scale research projects in Japan. Tight financial situation and difficulty in decoupling the ILC pre-laboratory, which includes site issues, from the entire ILC construction project are also matters for serious consideration.
- ✓ As MEXT's Minister explained in the Diet session, under the current situation that the perspective of broad internal and external cooperation for the ILC project itself as well as its pre-laboratory is not promised, it is difficult to obtain the Japanese citizens' understanding for investing in the pre-laboratory. Various challenges such as international cost sharing, technical feasibility, and the understanding of the citizens including the researchers community remains to be addressed.
- ✓ Japan recognizes that it is appropriate to continue discussions regarding the ILC project between administrative officials of the relevant countries at the right time, as well as to pay attention to researchers' efforts to deal with the remaining challenges.

[France]

- ✓ The French national roadmap for research infrastructure is currently being renewed for publication in the first half of 2022, after a one-year long consultation with national stakeholders. Although the new French national roadmap will be published in several months, it is already known the ILC project will not be part of it. Moreover, ILC will not be part of the European projects/landmarks in the new ESFRI 2021 roadmap either.
- ✓ In terms of financial capacity, France is facing difficult challenges related to various international projects which France has already committed to, including extra costs due to

construction delays, consequences of the COVID crisis, rising energy prices and so on. So, the financial capacity is very limited. At this stage, no funding is considered for the ILC project.

- ✓ More generally speaking, the French strategy on High Energy Physics has taken into account the recent update of the European Strategy for Particle Physics and its call for a Higgs factory as a next step. That said, France is on a prudent stance on the FCC project and will pay attention to the results of its feasibility study. France underlines that at this stage, given the number of proposed Higgs-factory projects, discussions in a global context need to be pursued to be able to move forward.

[Germany]

- ✓ Germany recognizes the scientific potential of the ILC project, in the German science community there is interest and cooperation for long years of several groups and institutions.
- ✓ For further discussion of the ILC project including the pre-laboratory, more clarification of the cost aspect of the ILC project is necessary. In the federal Budget in Germany, there is very little financial margin due to prioritized national projects with various financial needs.
- ✓ Germany has a national roadmap review process that is just starting next year, and expects to publish its result in 2024. If a significant German share to the investment in ILC project is expected, it must become a part of the roadmap.
- ✓ As long as the host country does not prioritize ILC project, it is difficult to give national priority for the ILC project in Germany.

[UK]

- ✓ The UK prioritizes existing projects, including the LHC and the HL-LHC based on the Update of the European Strategy for Particle Physics.
- ✓ Like any other country, the UK's budget is very tight due to COVID crisis. The UK has the budget review process next month to set government budget for next three years. Clear statement from Japan that Japan moves forward with the ILC project would be helpful for the UK.
- ✓ The UK national roadmap, which contains various field projects, is being revised. Although the UK might participate in the ILC project in the future, at this moment, it is very hard to discuss it under the current roadmap.

[US]

- ✓ The 2014 US Particle Physics Project Prioritization Panel (P5) Strategic Plan recognizes the strong scientific and technological importance of the ILC project.
- ✓ As already expressed by the US to Japan, the US continues to be supportive for a Japanese initiative to advance the ILC project to its pre-laboratory phase. Further discussions on many critical issues, including international financial contributions for the ILC project, can be conducted during the pre-laboratory phase.
- ✓ Any value of the contributions is connected to the technical scope. In order to further discuss details of the US contributions to the ILC project as well as to advance the project under the US Government budget processes, it is necessary to begin the pre-laboratory process which

requires global participation and is led by a host country.

- ✓ Responding to the US presentation, Japan indicated that it is difficult to proceed with the US proposal to begin the pre-laboratory process due to challenges earlier identified by MEXT.
- ✓ To conduct intergovernmental discussions, two types of structures can be considered: (1) the organizational framework provided by the IDT proposal or, (2) as an example, an interim council consisting of government members with an organization that includes management & finance and technical R&D support existing directly below a council. Intergovernmental discussions should be conducted in-parallel with discussion and activities among scientists.
- ✓ Responding to France's inquiry, the US noted that activities with CERN already have existed for the past several years and continue, including the technical R&D for the FCC accelerator. DOE is also now engaging with CERN to explore potential contributions to the tunnel excavation for the FCC. DOE also noted that its engagement activities with CERN on the FCC is different than with Japan on the ILC where regular discussions have continued with CERN while more engagement with Japan is needed if the ILC were to move forward in Japan.

## (2) Future processes

- Japan will provide information on the report of the MEXT's ILC Advisory Panel in due course.
- The participants confirmed that it is important to continue exchanging opinions at appropriate times.