

LINEAR COLLIDER COLLABORATION

Memorandum of Understanding for the Linear Collider Collaboration

Preamble

The Global Design Effort (GDE) has been working since 2005 on the design of the International Linear Collider (ILC) under a Memorandum of Understanding endorsed by the International Committee for Future Accelerators. The GDE has produced a Technical Design Report (TDR) and a cost estimate consistent with its mandate, which finished at the end of 2012.

In parallel, an international collaboration under the leadership of CERN has been working on an alternative design of a Compact Linear Collider (CLIC) which promises to have a greater energy reach but which will still need several years of R&D before the technologies on which it is based can be fully validated. The CLIC team has produced a Conceptual Design Report (CDR) and a roadmap of R&D activity over the next 5 years.

Although the accelerator structures of ILC and CLIC are different, many aspects of the design are similar for the two machines. In 2012, ICFA decided that a single coordinating structure should be created so that synergies between the two projects can be fully exploited. This resulted in the formation of the Linear Collider Collaboration (LCC) with a supervisory body, the Linear Collider Board (LCB) reporting to ICFA.

A formal handover from the GDE to the LCC was done at the ICFA meeting on 21st February 2013 in Vancouver.

1. Scope of this Memorandum of Understanding (MoU)

This MoU establishes an understanding of the collaborative effort, including the governance structure, between the Parties. It does not constitute or create any legal obligation on the part of any of the Parties. The Parties' rights and obligations in carrying out the tasks are governed by the arrangements with their respective funding agencies, governments and members, as the case may be.

2. Definitions

For purposes of this MoU:

- (a) "Cooperative activity" means any activity which the Parties recognize as being pursuant to this MoU, and includes joint research;
- (b) "Information" means scientific or technical data results or methods of research and development stemming from joint research and any other data relating to cooperative activities;
- (c) "Intellectual Property" shall have the meaning in Article 2 of the Convention

establishing the World Intellectual Property Organization done at Stockholm, 14 July 1967 and subject to the annexes which would be negotiated by each Party in the future and attached to this MoU;

- (d) "Interregional" means supranational entities including international groups from various geographical regions of the world;
- (e) "Joint research" means research recognized by the Central Team Director as relevant to the goal that is implemented with financial support from one or more Parties and that involves collaborative research and is designated as joint research in writing by the Parties or their scientific and technological organizations and agencies or in the case where there is funding by only one Party by that Party and the participants in that project; and,
- (f) "Parties" means scientific and technological organizations, research centers, universities and other legal entities which have signed this MoU.

3. Purpose of this MoU and mandate of the LCC

The purpose of this MoU is to provide a framework to internationalize the technical design effort of future Linear Colliders. To further this effort the Parties agree to replace the GDE for the ILC by the new LCC reporting to the LCB. The structure of the organization to be established under the LCB and relevant to this MoU will be outlined in an annex which will become an integral part of this MoU.

The mandate of the LCC is to support the global design effort to enable the possible realization of a timely electron-positron collider and its detectors based on ILC technology, to support the CLIC technology development for a potential future higher energy machine and to coordinate both efforts in order to fully exploit synergies between them.

4. Parties' Undertaking

4.1. The Parties agree to:

- (a) Provide such resources as the Parties deem appropriate to cooperative activities including the support of the Central Team Directorate. It is understood that in consideration of its longstanding experience in hosting scientific collaborations, CERN has offered to provide standard hosting services for the Central Team Directorate, subject to applicable rules, including, as the case may be, concerning the opening and usage of a Team Account and the registration of members of the Central Team Directorate as associated members of the personnel.
- (b) Undertake R&D design and pre-industrialization activities under the guidance of the Central Team; and
- (c) Support the cost-estimating effort.

4.2 Cooperative activities shall be conducted on the basis of the following principles:

- (a) Mutual benefit based on an overall balance of advantages;

- (b) Reciprocal opportunities to engage in cooperative activities;
- (b) Equitable and fair treatment;
- (d) Timely exchange of information which may affect cooperative activities; and
- (e) All work performed by a Party as part of the collaboration would be consistent with the laws, regulations, policies and programs of the Party's government and its funding agencies.

5. Funding

- (a) Cooperative activities shall be subject to the availability of appropriated funds and to the applicable laws, regulations, policies and programs of the Parties and their respective funding agencies, governments and members, as the case may be.
- (b) Cooperative activities are supported by funding of the Parties which shall attempt to secure reasonable funding to allow for the successful and timely completion of the activities described in this document. Each of the Parties must notify the Central Team Director in writing that their respective internal procedures necessary for Funding and support have been completed. The contributions by the Parties should be recognized by the Central Team Director as relevant to the goal.

6. Personnel and Equipment

Each Party shall take all reasonable steps and use its best efforts within applicable laws and regulations to facilitate entry to and exit from its territory of persons material data and equipment involved in or used in collaborative activities under this MoU.

7. Ownership of Equipment

All equipment purchased or fabricated using funds of a Party or its collaborating institution remains the property of that Party or its collaborating institution and shall be subject to the property management system of that Party or its collaborating institution. It is the intent of the Parties that all equipment purchased or fabricated by a Party or its collaborating institution and incorporated into the ILC prototype or a test facility would remain with the prototype effort or test facility until it is determined by the Central Team Director that such equipment is no longer needed. At that time the property would be returned to that Party or its collaborating institution at their expense.

8. Intellectual Property Rights

8.1 Intellectual property means all property, including know-how. In such forms as drawings, designs, documents, inventions, software programs, reports, processes and protocols that is protected by such means as secrecy, patents, copyrights and trademarks.

8.2 Except as may be agreed otherwise, the rights in intellectual property created by a Party, or jointly by several Parties, prior to the conclusion of this MoU shall remain vested or vested respectively, in that Party or jointly in those Parties.

8.3 Subject to such pre-existing restrictions as it shall disclose in writing when making its contribution available, each Party making a contribution under this MoU herewith grants a royalty-free, non-exclusive, non-transferable un-assignable and irrevocable license to the other Parties to use the intellectual property for the exclusive purpose of the execution of this MoU. The term “use” shall include any integration, modification, enhancement and redistribution, including by any third party participating in the execution of the purpose. The using Party shall agree in writing with such third parties that their use of the intellectual property shall be for the exclusive purpose of the execution of this MoU. Prior to making its contribution, the contributing Party shall ensure that it is entitled to license the intellectual property in its contribution to the other Parties on the terms defined in this paragraph.

8.4 A Party shall do its best to obtain from third parties the royalty-free use of intellectual property on relevant technology, if possible.

8.5 The contributing Party provides no representations or warranties in respect of its intellectual property. The using Party or Parties shall hold the contributing Party harmless from liability resulting from its or their use of such intellectual property. The contributing party shall have no obligation to participate in any legal actions regarding intellectual property.

8.6 The obligations defined in this article shall apply whether or not the intellectual property is pre-existing or developed in the execution of the contribution, and whether or not it was developed by a team or by an individual.

9. Publications

9.1 All scientific and technological results produced by the activities covered by this MoU shall be made publicly available. Any special procedural agreements required for publication resulting from the activities under this MoU shall be defined in the annexes to this MoU. All other publications developed under this collaboration by an institution are subject to the procedures of that institution and to the laws, regulations policies and programs of its funding entity.

9.2 Publication will be collaborative although any Party has the right to publish information in part or in whole independent of the others subject to informing the other Parties in writing of their intention to do so. Consent to publish may be denied in writing by a Party if proprietary information is involved. Disputes will be settled through mutual cooperation befitting the scientific goals of the project.

9.3 All publications are required to indicate the contribution made by each of the Parties. Publications will preferably follow Open Access principles.

10. New Parties

10.1 This MoU is open to other international participants including national laboratories universities, scientific and technological organizations and agencies research centers subsidiaries of international and national entities or any other form of legal entity that seeks to collaborate in cooperative activities and which is recognized as making important contributions to the common goal. The acceptance of a new Party is subject to agreement by the existing Parties.

11. Resignation of a Party

11.1 Any signatory of this MoU may resign upon giving one year written notice to the other signatories. Property of the signatory being used in collective activities of the signatories is regulated as set forth in Section 7 (Ownership of Equipment).

12. Settlement of Dispute

- (a) All Parties subject to this MoU shall approach all activities in the spirit of mutual cooperation befitting the common scientific goals.
- (b) The Parties shall consult with each other on any dispute arising out of the interpretation or implementation of this MoU. The Parties shall use their best efforts to settle disputes promptly through consultation.
- (c) If any issue that is not settled through such consultations still needs to be resolved the Parties may if they agree submit the issue to a mutually acceptable form of dispute resolution such as conciliation or mediation. If agreed to by the Parties this could include submission of the dispute to an international arbitration tribunal if appropriate.

13. Amendments

This MoU may be modified or amended as deemed necessary by written agreement of all the Parties.

14. Language

This MoU is done in the English language only in as many copies as there are Parties each of them equally valid.

15. Duration

This MoU shall become effective upon the date of the last signature of the Parties listed below. It shall remain in effect until superseded or amended, or three years from the effective date whichever comes first, and be renewed unless the Parties agree otherwise,

16. Signatories

Asia;

Europe;

North America;

Annex

Organizational Structure, Functioning and Governance

1. General Principles

- 1.1. The LCB establishes the Central Team to coordinate and direct the effort of the teams in Asia, Europe and Americas that comprise the Linear Collider Collaboration (LCC).

2. Function of the Central and Regional Teams

- 2.1. The Central Team is the focal point for the Linear Collider design effort, holding the schedule, major milestones, and parameter list, and providing intellectual leadership under the guidance of LCB representing ICFA.
- 2.2. Regional Teams perform the R&D and design work of Linear Collider systems in close coordination with the Central Team.

3. Composition of the Central Team

- 3.1. The Central Team will be led by the Linear Collider Collaboration Director.
- 3.2. The LCC Director will be selected and appointed by the LCB with recommendations from the Regional Steering Committees.
- 3.3. The LCC Director will appoint a deputy and three Associate Directors responsible for ILC, CLIC and Detectors respectively. In addition the LCC Director will appoint three regional Directors in consultation with the Associate Directors. Each Regional Director will be a member of the Central Team and as such will have primary loyalty to the Central Team.

4. Responsibilities of the Central Team

- 4.1. The responsibilities of the Central Team are to collectively:
 - 4.1.1. Manage the execution of the Linear Collider design and associated R&D;
 - 4.1.2. Establish technical and administrative controls to ensure that the agreed-upon work is executed within their approved cost, schedule and technical scope under this MoU; and
 - 4.1.3. Maintain and control the machine parameters database and configuration documents, and direct overall design effort.

5. Responsibility of the Central Team Director

- 5.1. The Central Team Director will be responsible to the LCB for leading the Central Team to fulfill the responsibility of the Central Team.
- 5.2. Should the need for conflict resolution arise, the Central Team Director has the final

authority in all areas of design and personnel in the Central Team.

- 5.3. He/she will be the primary representative for the project in interactions with external entities and in the project-status reporting.

6. Funding for the Central Team Activities

- 6.1. Participating institutions will be expected to share the cost of common operations of the Central Team such as the administrative expenses including the secretarial support, purchase of web services, and other expenses as requested by the Central Team Director and endorsed by the LCB.
- 6.2. The Central Team Director will be supported by the common fund.
- 6.3. The Regional Directors are expected to be supported by their respective institutions or their respective regional funding agency(ies).
- 6.4. The scientific and technical staffs on the Central Team are expected to be supported by their respective home institutions.

7. Composition of the Regional Teams

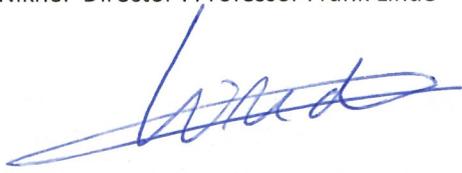
- 7.1. The Regional Steering Committees will facilitate formation of their respective regional teams and the apportionment of regional resources to regional commitments to the LCC.
- 7.2. Members of the Regional Teams are employees of their home institutions, supported by local funding sources.
- 7.3. The number of people in a Regional Team will be determined by the scope of the tasks that each Team will be assigned to undertake by the Central Team Director.

8. Governance

- 8.1 The LCB, representing ICFA, will provide oversight to the LCC Central Team with its Director directly reporting to the LCB.
- 8.2 Regional Steering Committees will advise and assist the respective Regional Teams to facilitate their activities and will not act as their oversight bodies.
- 8.3 The LCB will have a close consultative relationship with the Funding Agencies for Large Colliders.
- 8.4 The Central Team Director will keep the Funding Agencies for Large Colliders well informed.
- 8.5 A Machine Advisory Committee (MAC) will be set-up to advise the LCB as well as the LCC on technical and other issues involved in the ILC and CLIC accelerators. MAC members will be appointed by LCB with advice and consent from the LCC Central Team Director.

Signature

Nikhef Director : Professor Frank Linde

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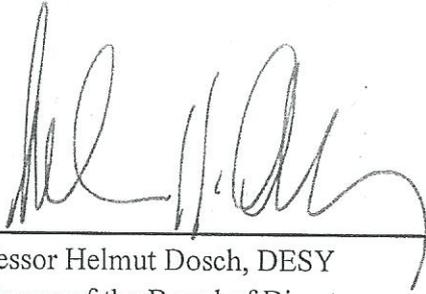
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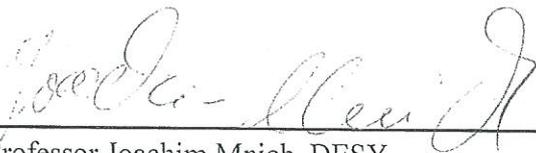
IBS/RISP Director of RISP: Sun Kee Kim

Sun Kee Kim

Hamburg, 12.12.2013



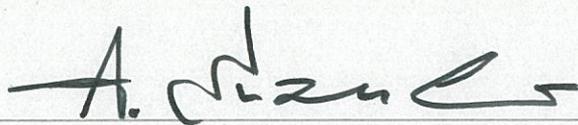
Professor Helmut Dosch, DESY
Chairman of the Board of Directors



Professor Joachim Mnich, DESY
Director of Particle and Astroparticle Physics

Signature

KEK Director-General: Professor Atsuto Suzuki

A handwritten signature in black ink, appearing to read 'A. Suzuki', is written over a horizontal line.

Geneva, _____



Professor Rolf-Dieter Heuer, CERN
CERN Director-General

Signature

TRIUMF CEO/CAO, Jim Hanlon

 2014/01/17