



18-June-2008

**Memorandum of Understanding
for the Establishment of a Technical Design Phase
of the Global Design Effort
Concerning the International Linear Collider**

THE SCIENTIFIC AND TECHNOLOGICAL ORGANIZATIONS, RESEARCH CENTERS, LABORATORIES, UNIVERSITIES, FUNDING AGENCIES AND OTHER LEGAL ENTITIES WHO ARE SIGNATORIES OF THIS MEMORANDUM OF UNDERSTANDING (**here after called the Parties**)

Whereas

In response to the interest of the worldwide elementary particle physics community in TeV scale physics, the International Linear Collider Steering Committee (ILCSC), a subcommittee of the International Committee for Future Accelerators (ICFA), is exploring research and development (R&D) efforts towards a 500 GeV to 1 TeV electron-positron linear collider. The ILCSC intends to globalize the International Linear Collider (ILC) technical design effort and broaden collaborative efforts internationally, interregionally as well as with national laboratories and universities;

With the aforementioned objective, the ILCSC has drafted a Memorandum of Understanding, which was signed on May 10, 2005 (the 2005 MoU), initially by ILCSC members representing their laboratories and subsequently by other participants, as an instrument to jointly initiate the Global Design Effort (GDE);

The initial task of the GDE was to develop a Conceptual Design Report (CDR); later, the CDR task was divided into two tasks, namely development of a Baseline Configuration Document (BCD) and a Reference Design Report (RDR), and a preliminary cost estimate was added;

The GDE had successfully completed the BCD by the end of 2005 and completed the development of the RDR by the beginning of 2007. The RDR document and accompanying cost estimate were delivered to the ILCSC and ICFA at their meeting on February 7, 2007 in Beijing, China. With the International Cost Review that was jointly organized by the ILCSC and FALC and took place on May 23 – 25, 2007 at Orsay, France, the first phase of the GDE mission was completed;

Now, in the second phase of this R&D effort, the ILCSC has drafted a new Memorandum of Understanding as an instrument to embark on the Technical Design Phase (TDP) of the GDE activities, including more focused R&D as required to reduce the technical risk and cost and for a more refined cost estimate and value engineering;

While working towards a form of international governance which would allow a more formal and internationally coordinated approach, the Parties recognize the critical importance of developing more formal governance for the ILC that includes the international funding agencies. The Parties will actively study models and advocate schemes for evolving the GDE toward one having international governance at the earliest possible time;

herewith agree on this Memorandum of Understanding (MoU).

1. Purpose and Nature of this MoU

- 1.1 This MoU establishes a common understanding among the Parties of the collaborative effort required by the GDE for the ILC accelerator system and for the required conventional facility design including more focused R&D as required and a more refined cost estimate. Adapted for the purposes of the TDP activities, it extends the GDE and continues the organizational structure as governed initially by the 2005 MoU.
- 1.2 Save for articles 4, 5, 6, 7, 10 and 11, which are binding and shall survive the termination of this MoU, this MoU does not create legal obligations for any of the Parties. Subject to the foregoing, the Parties' participation in the collaborative effort is governed, as the case may be, by their internal rules and regulations, their agreements with their respective funding agencies and the laws, regulations and policies of their respective Governments.

2. Parties' Undertaking

- 2.1 Each Party agrees to contribute to the TDP efforts, whether as part of a team or individually, and striving, in as much as feasible, at a reasonable geographical balance between the contributions, by:
 - performing R&D, design, pre-industrialization work, and other activities recognized by the Central Team Director (as defined in the Annex) and the Party concerned as being relevant to the TDP efforts, under the guidance of the Central Team and funded by such a Party;
 - supporting the cost-estimating effort;
 - providing resources to support the Central Team in accordance with the principles defined in the Annex;
 - encouraging its funding agencies and Government, as the case may be, to establish international governance for this Technical Design Phase of the GDE.

2.2 Each Party's agreement to contribute to activities in the TDP shall be subject to:

- the availability of resources, which it shall attempt to secure at levels appropriate for the successful and timely completion of its contribution. It shall notify the Central Team Director in writing once such resources have been secured;
- compliance with, as the case may be, its internal rules and regulations, its agreements with funding agencies and the laws, regulations and policies of its Government;
- the recording of the scope, objectives and results of the contribution, and its dissemination to the other Parties, by the Central Team.

3. Contributions to be laid down in Addenda

Each contribution shall be defined in an Addendum to this MoU, which shall be signed by the Central Team Director, acting on behalf of the ILCSC, and by the contributing Party, and which shall be subject to the terms of this MoU. The parties to the Addendum shall amend or extend the Addendum in case of changes or additions to the contribution. The Addendum shall *inter alia* define the scope, objectives and milestones of the contribution, and where the Party makes its contribution as part of a team, the Addendum shall mention the other Parties involved. Each Party, forming part of a team, may enter into agreements with the other Parties in the team with a view to co-ordinating their respective contributions.

4. Personnel and Equipment

- 4.1 Subject to applicable laws and regulations, each Party shall use its best efforts to facilitate entry and exit of persons, equipment, materials and data (the equipment) related to the contributions under this MoU to and from the territory in which it is located. It is understood, however, that except as may be agreed otherwise in writing, responsibility for this matter shall remain with the sending Party and the latter shall hold the facilitating Party free and harmless from liability resulting from its efforts.
- 4.2 Except as may be agreed otherwise in writing, where a Party sends its personnel to another Party, it shall hold the receiving Party free and harmless from claims related to the provision of remuneration and social security cover, including health insurance.

5. Ownership of Equipment

Except as may be agreed otherwise in writing, all equipment owned by a Party or by Parties shall remain the property of that Party or those Parties throughout their use for the purpose of this MoU, and shall be subject to the property management system of that Party or those Parties. It is the intent of the Parties that all equipment provided by a Party or by Parties as part of its or their contribution and incorporated into the ILC prototype or a test facility shall remain with the ILC prototype or the test facility respectively until the Central Team has determined that the equipment is no longer needed. At that time the equipment shall be returned to its or their owners, at its or their expense.

6. Intellectual Property

- 6.1 Intellectual property shall mean 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.
- 6.2 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 or in the execution of this MoU shall remain vested or be vested respectively, in that Party or jointly in those Parties.
- 6.3 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.
- 6.4 A Party shall do its best to obtain from third parties the royalty-free use of intellectual property on relevant technology, if possible.
- 6.5 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 such intellectual property.

- 6.6 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 individual.

7. Publications

- 7.1 Subject to acknowledgement of each Party's contribution and to such procedural arrangements, including approval deadlines, as the Parties shall agree on and lay down in an Annex to this MoU, the Parties shall publish the scientific and technological results generated under this MoU, preferably through Open Access journals.
- 7.2 Publication shall be collaborative, although any Party shall be entitled to publish information independently of the other Parties, subject to giving such Parties adequate prior notice in writing of its intention to do so and to acknowledging any intellectual property rights which the Party or Parties concerned may request in writing to the publishing Party that are to be acknowledged.

8. New Parties

This MoU is open for new participants including scientific and technological organizations, research centers, laboratories, universities, funding and any other party subscribing to the purpose of this MoU and is recognized as being capable of making an important contribution to its realization. The accession of a new participant as a signatory to this MoU shall be subject to prior written agreement by its initial signatories.

9. Resignation by a Party

Although the Parties recognize that a sustained effort is required to realize the purpose of this MoU, any Party may resign upon giving one year prior written notice to the Central Director, who shall transmit such notice to the other Parties. The resigning Party shall continue to make available any contribution already incorporated into the ILC prototype or a test facility and article 7 of this MoU shall continue to apply thereto.

10. Liability

Except as explicitly stipulated in this MoU, the Parties shall have no liability to each other in connection with the execution of this MoU.

11. Settlement of Disputes

The Parties shall settle any dispute arising from the execution of this MoU amicably, including through conciliation or mediation. Failing to do so, the Party or Parties concerned may submit the dispute to an international arbitration tribunal, composed of a single arbitrator or of several persons, in accordance with such procedures as shall be defined by the Parties to the dispute. The decision of the arbitration tribunal shall be final and binding and the Parties herewith renounce any right of appeal, revision or recourse.

12. Amendments

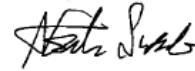

This MoU may be amended by written agreement of all the Parties.

13. Language

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

14. Duration

- 14.1 It is the intention of the Parties that execution of the provisions of this MoU shall be limited to the period of this MoU.
- 14.2 This MoU shall become effective on the date of its signature by the last of its initial signatories. Except if it is terminated prematurely by the Parties, it shall remain in effect for a three-year period, and may subsequently be renewed through a decision by the Parties if so required for the realization of its purpose.
- 14.3 It is anticipated that the completion of the TDP would initiate the next stage of activities. At such time, the Parties shall review the requirements for such next stage and decide on the appropriate legal framework.

SIGNATURES**Brookhaven National Laboratory (BNL)****Budker Institute of Nuclear Physics (BINP)****Deutsches Elektronen-Synchrotron (DESY)****European Organization for Nuclear Research (CERN)****Fermi National Accelerator Laboratory (Fermilab)****High Energy Accelerator Research Organization (KEK)****Institute of High Energy Physics, Beijing (IHEP)****Laboratory for Elementary-Particle Physics, Cornell University (LEPP)****LCUK Collaboration****Pohang Accelerator Laboratory (PAL)****Stanford Linear Accelerator Center (SLAC)**

(all being initial signatories of this MoU)

October 31, 2008

Annex 1

Organizational Structure, Function and Governance

1. General Principles

The ILCSC, acting in consultation with FALC, establishes the Central Team, which shall direct and coordinate the activities in Asia, Europe, and Americas that together make up the GDE. The ILCSC is to provide the technical oversight to the GDE activities.

2. Responsibilities of the Central Team

The focal point for activities in the TDP, establishing and holding the schedule, major milestones and the parameter list, and providing intellectual leadership under the guidance of the ILCSC, is the Central Team. Assisted in the day-to-day execution of its duties by (a) Project Manager(s), the Central Team shall:

- Manage the execution of this MoU and direct the overall design effort, including the definition of the contributions by the Parties and their oversight and coordination;
- Establish technical and administrative controls to ensure that the contributions are executed on time, within their approved budget and the applicable parameters;
- Manage the parameters database and configuration documents.

3. Composition of the Central Team

- 3.1 The Central Team shall be led by the Central Team Director, who shall be selected and appointed by the ILCSC, having received recommendations from the Regional Steering Committees.
- 3.2 The Central Team Director shall appoint three Regional Directors, each nominated by the Regional Steering Committee of his or her region. Each Regional Director shall become a member of the Central Team and shall facilitate the GDE in his or her region.
- 3.4 The Central Team shall have its own staff, including (a) Project Manager(s), who shall assist the Central Team in the execution of its duties.

4. Responsibility of the Central Team Director

The Central Team Director shall:

- lead the execution of the Central Team's duties and be accountable to the ILCSC;
- submit progress reports to the ILCSC on a regular basis;
- decide on any issue which may arise within the Central Team;
- be the primary representative in interactions with external entities related to the TDP of the GDE, it being understood that the Central Team Director shall have no authority to bind any of the Parties in such interactions.

5. Funding of the Central Team Activities

- 5.1 The Parties are expected to share the cost of common operations of the Central Team, including the cost of secretarial and other administrative support and of the purchase of web services, as provided for in the approved operational budget (and, as the case may be, modified) and controlled by the FALC Resources Group.
- 5.2 The Central Team Director, the Regional Directors and the staff of the Central Team, including the Project Manager(s) are expected to be supported by their respective home institution and/or regional funding agency(ies).

6 Interactions with the ILCSC Research Director, the Project Advisory Committee, and the World Wide Study

- 6.1 The Central Team Director will work in close cooperation with the Research Director on machine issues affecting the experimental program in order to achieve the ILC project goals. The ILCSC Research Director, who is appointed by and reports to the ILCSC, is responsible for the development of the experimental program of the ILC.
- 6.2 The Project Advisory Committee (PAC) shall advise the ILCSC on accelerator related technical and other issues involved in the execution of the MoU. It also advises the ILCSC on detector related and other issues managed under the ILCSC Research Director. PAC members shall be appointed by the ILCSC, having taken advice from the Central Team Director and the Research Director.

- 6.3 The World Wide Study (WWS) will continue to report to the ILCSC and advise it on ILC physics and detector issues, while maintaining close contact with the GDE on the development of detector concepts machine detector interface and R&D.

Annex 2.1

The following institution agrees to become a Party to the 18 June 2008 Memorandum of Understanding for the Establishment of a Technical Design Phase of the Global Design Effort concerning the International Linear Collider.

<u>Institution</u>	<u>Signatory name</u>	<u>Date</u>	<u>Signature</u>
Center for High Energy Physics, Kyungpook National University (CHEP)	Dongchul Son	16 Nov 2008	