

## ACFA Statement on the $e^+ e^-$ Linear Collider

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*The 3rd ACFA Statement was issued on February 23, 1997 at the Second ACFA meeting.*

ACFA appreciates that intensive worldwide studies on the  $e^+ e^-$  linear collider are being made and expects that a proposal for its construction will appear within a few years. ACFA believes that such a machine should be built as an international facility open to all interested parties. Precision measurements of the electro-weak parameters at LEP and SLC, and the discovery of the top quark at Tevatron have given strong boosts to the Standard Model of the electro-weak unification of interactions. There are other important issues associated with the Standard Model, such as:

- the existence of the Higgs boson and
- the origin of CP violation.

Besides the above, one also expects to find new physics beyond the Standard Model.

The majority of breakthroughs in the frontier of particle physics during the last 25 years were made possible through the capability of colliders to achieve the highest possible energy using the present technology. In recent years a worldwide consensus has emerged that a natural next step is to build an  $e^+ e^-$  linear collider initially with a center of mass energy of 300 - 500 GeV, and to later upgrade it to an energy greater than 1 TeV. The physics capability of this facility will be complimentary to that of LHC (Large Hadron Collider, an approved project at CERN, is expected to be commissioned in 2005.), and will be essential for a deeper understanding of the fundamental structure of matter beyond the Standard Model.

ACFA has discussed the Action Plan of the Japan High Energy Committee (Appendix I) aimed at constructing of the  $e^+ e^-$  linear collider in the Asia-Pacific region, and endorses the same.

ACFA expects that Asia will become one of the most active regions in the field of accelerator-based science and technology. It is extremely important that the countries in the region work together closely to achieve this goal. ACFA appreciates the effort of KEK to internationalize itself so that it can play a major role in the construction of the  $e^+e^-$  linear collider.

A frontier facility like the  $e^+e^-$  linear collider is important as a spearhead to promote all fields of basic science and technology; it could also be instrumental in establishing a major international organization in the Asia Pacific region from which all countries in the region can benefit. ACFA would be happy if the Japanese Government would take an initiative in creating such an international organization.

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Action Plan for Promoting Linear Collider Project

May 15, 1996

Japan High Energy Committee

On the basis of the report on the 2nd linear collider (LC) R&D plan made at the 150th High Energy Committee and the Interim Report issued by the Subcommittee on Future Projects of High Energy Physics, we propose the following action plan in order to vigorously promote the LC project:

1. We aim at the total center of mass energy range of 200-500 GeV as the first phase of the project and eventually try to reach the TeV energy region as the second phase.
2. The LC should be built in Asian-Pacific region. The institution to carry out the LC project should be an international organization and its facilities should be open to international user community. We express our intention to host the project.
3. We aim at starting the construction of the LC in the year 2001. In order to achieve the purpose, we should complete a basic design of the LC by early 1997 or by the end of JFY1996 and then proceed to a more detailed design.
4. The ATF (Accelerator Test Facility) currently under construction at KEK should be fully utilized in order to identify technical issues with respect to the LC. R&D on main linac will be centered on the X-band system, whereas R&D on the C-band system will be strengthened as realistic backup technique.
5. An "LC project office" should be established within KEK to lead the project. An "LC project Council" consisting of representatives from both universities and KEK will steer the project in close collaboration with the LC project office.
6. We should aim to build a new "International Accelerator Center" (name tentative). For its realization and also in view of a possibility that KEK could be expanded and converted to an international organization, an initiative should be promptly taken to further internationalize KEK.