

Realizing a Linear Collider: Recent Developments



By Jonathan Dorfan

Santa Cruz Linear Collider Retreat

June 29th, 2002



Linear Collider — Much Progress

There has been a lot of progress nationally and internationally in the past 6 months

- **Chicago Linear Collider Workshop, January 6-9, 2002**

Larger than usual turnout with lots of “new faces”

Baltay and Grannis offer to step down as the leaders of the US Physics and Detector effort to allow new leadership

The Group has been renamed “American Linear Collider Physics Group”. Jim Brau and Mark Oreglia have taken over from Baltay and Grannis, and in addition they have an executive committee to support them

First discussion about structure and membership of the US LC Steering Committee

- **HEPAP meeting January 28-29**

Sub-panel Long Range Plan endorsed by full HEPAP

LC Steering Committee function split in two. Communication and Outreach Group established



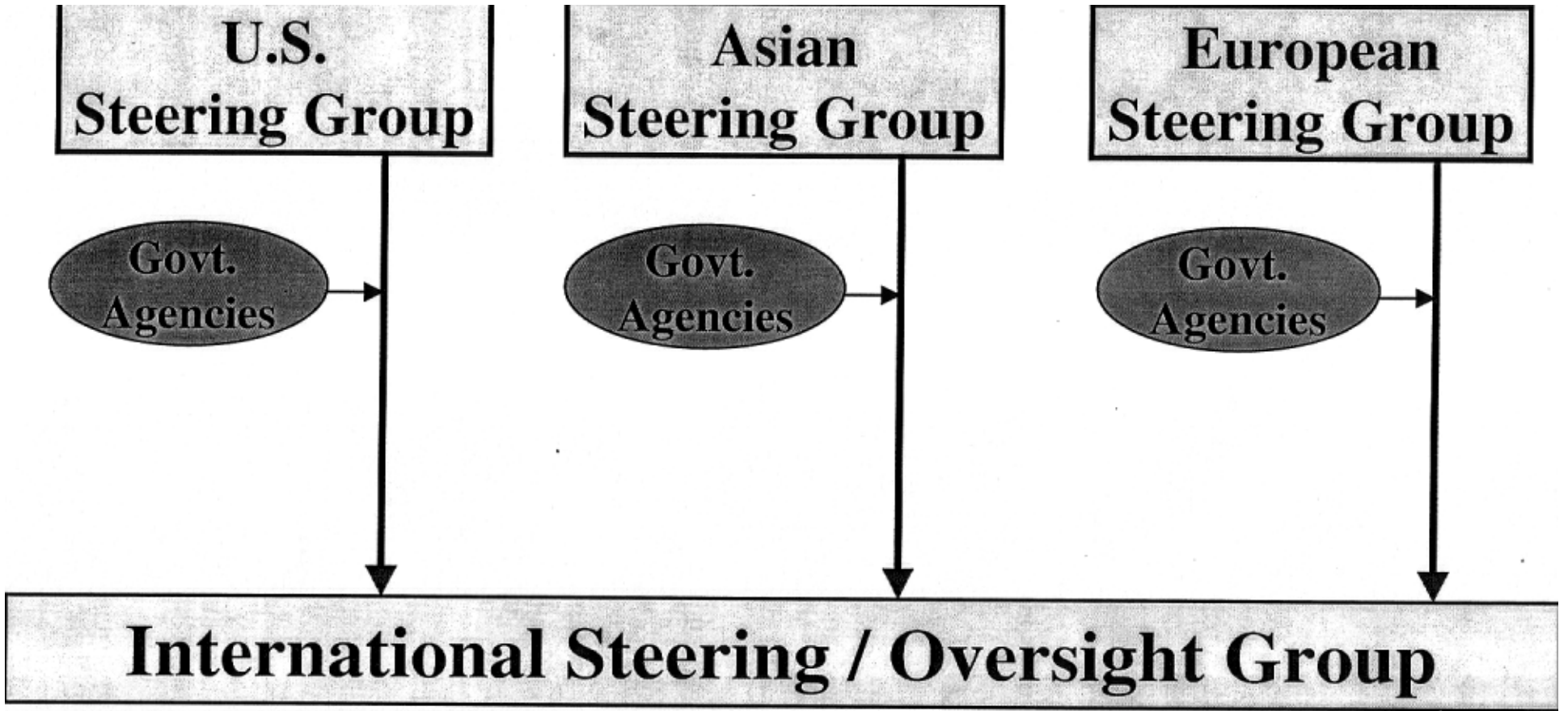
American Linear Collider Physics Group

○ Co-leaders:

- ✧ **Jim Brau (Oregon)**
- ✧ **Mark Oreglia (Chicago)**

○ Executive Committee:

- ✧ **Ed Blucher (Chicago)**
- ✧ **Dave Gerdes (Michigan)**
- ✧ **Lawrence Gibbons (Cornell)**
- ✧ **Dean Karlen (Carleton University)**
- ✧ **Young-Kee Kim (University of California, Berkeley)**
- ✧ **Hitoshi Murayama (University of California, Berkeley)**
- ✧ **Jeff Richman (University of California, Santa Barbara)**
- ✧ **Rick Van Kooten (Indiana University)**



Steers towards



**International Organization / Laboratory
Charged with Constructing LC**

Global Goal
≈ 2005



U.S. Communication and Outreach Group

Charter:

- **Be a central source of information and outreach to other scientific communities, the government, and the public for the twenty-year vision for U.S. particle physics contained in the Subpanel report**
- **Develop a strategic communication plan, including innovative ways to get our message across, with the aim of increasing support to the level needed to keep the U.S. among the world leaders in particle physics**
- **Use existing materials and develop new ones, such as a briefing book and colloquium talk based on the Subpanel report, to further understanding of what particle physics is and how we will explore the frontiers of matter, energy, space, and time in the next two decades**
- **The initial membership is:**
 - ✦ **Jonathan Bagger (co-chair)**
 - ✦ **Neil Calder**
 - ✦ **Persis Drell**
 - ✦ **Paul Grannis**
 - ✦ **Larry Krauss**
 - ✦ **Jim Siegrist**
 - ✦ **Barry Barish (co-chair)**
 - ✦ **Sally Dawson**
 - ✦ **Fred Gilman**
 - ✦ **Judy Jackson**
 - ✦ **Mel Shochet**
 - ✦ **Herman White (Executive Secretary)**



Linear Collider — Much Progress

(continued)

- **Ninth International Workshop on Linear Colliders (LC02) was held at SLAC February 4-8, 2002**
 - Machine builders have added incentive of regional recommendations to build a machine soon**
- **Organization for Economic Cooperation and Development (OECD) Global Science Forum Consultative Group met at SLAC February 13-14, 2002**
 - Report July 2002**
 - Proposal to establish an International LC Steering Committee receives strong support**
- **ICFA meeting at SLAC February 14-15, 2002**
 - Joint meeting with OECD brings together the “physicists” and the “governments”. ICFA hears substance of the OECD report**
 - Progress report from “Greg Loew Panel” well received**
 - ICFA sets up a working group to establish by the July ICHEP02 meeting an international LC Steering Committee**



Linear Collider — Much Progress

(continued)

- **Physics and Detectors for a 90 to 800 GeV Linear Collider Second Workshop of the Extended ECFA/DESY Study, Saint Malo, April 12-15, 2002**
 - ↳ **Formulation of joint committee of LC and LHC physicists to articulate better the complementarity of the physics goals for the two machines**
- **HEPAP meeting April 26-27, 2002**

HEPAP endorses proposed structure and membership of the US LC Steering Committee
- **May 2002. Europeans form the European LC Steering Group (ELCSG)**
- **Santa Cruz LC Workshop, June 27-29**
- **International Workshop on Linear Colliders in Jeju Island, Korea. August 26 - 30, 2002**
 - ↳ **Next in series of international meetings for the physics and detector community**

US Linear Collider Steering Committee

Executive Committee

Jonathan Bagger, Jim Brau, Sally Dawson, David Burke, Jonathan Dorfan (Chair), Gerry Dugan, Jerry Friedman, Steve Holmes, Young-Kee Kim, Dan Marlow, Mark Oreglia, Maury Tigner, Mike Witherell, Harvey Lynch (Exec Secretary)

Accelerator
Sub-committee

Chair: Dugan

Detector/Physics
Sub-committee

Chairs: Oreglia
Brau

Public and Government
Relations Sub-committee

Chairs: Bagger, Dawson

International Affair
Sub-committee

Chair: Tigner





US Linear Collider Steering Group

Charter:

- **The U.S. Linear Collider Steering Group leads universities and national laboratories working toward U.S. participation in an international high-energy, high-luminosity, electron-positron linear collider wherever it is built and preparing elements of a bid to host the project in the U.S. The establishment of such a body was recommended by the HEPAP Subpanel on Long Range Planning.**
- **While the functions of the Steering Group are expected to evolve with time, the initial U.S. Linear Collider Steering Group will:**
 - ⊗ **Prepare, communicate, and begin to implement a road map for defining, internationalizing, funding, and carrying out a linear collider project**
 - ⊗ **Work with potential high-energy physics international partners and with governmental agencies, including equivalent groups in other regions of the world and the International Linear Collider Steering Group, to define a linear collider project**
 - ⊗ **Provide an evaluation of options for building the linear collider involving factors such as scientific requirements, technical feasibility, risk, cost, initial facility parameters, upgradability of alternate technologies, and the implications of different sites**
 - ⊗ **Prepare the elements of a U.S. bid to host the linear collider**
 - ⊗ **Coordinate and propose U.S. accelerator research and development for a linear collider**
 - ⊗ **Coordinate and propose U.S. research and development on physics and detectors for experiments to be carried out at a linear collider**



European Linear Collider Steering Group

- **Membership:** **Brian Foster (Chair)**
 Luciano Maiani
 Albrecht Wagner
 David Miller
 Sergio Bertolucci
 Francois Richard

- **Has met twice. Will form sub-committees in areas of: outreach, technical issues, Administration and Global Accelerator Network**



Conclusions

- **The physics arguments for building a linear collider with initial energy of 500 GeV are compelling. The LC is needed as a sister machine to the LHC if we are to unravel the mystery of EW Symmetry breaking**
- **All three regions have concluded that there is an urgent need for such a facility**
 - ↪ **There is general agreement on the machine parameters**
 - ↪ **All regions are pushing for a truly international implementation plan**



Conclusions (continued)

- **In the short time since this unprecedented regional alignment of priorities occurred, the worldwide HEP Community has made impressive strides towards establishing a truly international approach to realizing the Linear Collider**
- **The U.S community has a much increased level of engagement which is very exciting. We anticipate an excellent suite of proposals for university-based R&D on the machine and the detector.**