

Report on the Chicago Linear Collider Workshop



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Report to HEPAP 1/29/02

- Goals of the workshop
- Attendance
- Organization of the Working Groups
- Public discussion
 - “Grassroots” efforts
 - Creation of a Steering Committee
- Internationalization
- What Next?
- Impact of the Workshop

Workshop Structure and Goals

- The Chicago workshop was one in a series of biannual Linear Collider meetings organized by Charlie Baltay and Paul Grannis ...
- But this was the first meeting since release of the HEPAP draft report ... we expected it to be different ... in the words of the invitation:
- This workshop continues a series of North American workshops held over the past several years, and parallels similar series in Europe and Asia. However, following the intense discussion and evaluation of the LC program at Snowmass, this meeting will play a special role in presenting physics potential and the detector issues to a wider group than has heretofore been involved. We think that this workshop should be an excellent opportunity for all to become more involved in shaping a future LC program, and to become more familiar with the issues that surround it.
- The Workshop had:
 - 1.5 days of plenary, 1 day of parallel sessions
 - Video streaming (<http://LCworkshop.uchicago.edu/>)

Plenary Sessions

Monday, January 7: Plenary Session

8:30-8:45 Charge to the Workshop (P. Grannis)

8:45-10:30 Machine Challenges

8:45 - 9:30 Beam Power (C. Adolphsen)

9:30 - 10:00 Luminosity (R. Brinkmann)

10:00 - 10:30 IR Options (T. Markiewicz)

10:30 - 11:00 break

11:00 - 12:30 Physics Goals

11:00 - 11:45 Higgs Boson Physics (M. Peskin)

11:45 - 12:30 SUSY Physics (S. Heinemeyer)

12:30 - 14:00 lunch break

14:00 - 15:00 Physics Goals (continued)

14:00 - 14:30 Standard Model Physics (L. Gibbons)

14:30 - 15:00 Beyond the Standard Model (J. Lykken)

15:00 - 16:30 Detector Challenges

15:00 - 15:25 Tracking (K. Riles)

15:25 - 15:50 Calorimetry (R. Frey)

15:50 - 16:10 break

16:10 - 16:35 Muon Systems (G. Fisk)

16:35 - 17:00 Simulations (N. Graf)

17:00 - 18:00 International Logistics, Funding (Directors Panel: Dorfan, Rosen, Tigner, Witherell)

17:00-17:30 Towards a Machine and International LC Planning (M. Tigner)

17:30 - 18:00 panel comments, Q&A, open discussion

Wednesday, January 9: Plenary Session

08:30-09:00 Physics Issues Needing Further Study (S. Dawson)

09:00-09:30 Test Facilities (K. Kubo)

09:30-10:15 LC R&D in the USA (S. Holmes)

10:15 - 10:45 coffee

10:45-11:30 First Report on the International Detector R&D Panel (R. Heuer)

11:30-12:00 Activity Report on the ILC-TRC ("Loew Report") (G. Loew)

12:00-12:30 North American Working Group Structure (C. Baltay)

Parallel (WG) Sessions

8:30 am Morning Session (Physics Potential)

<p>Higgs (non-SUSY) contacts: R. Van Kooten, H. Haber Rm 600A</p>	<p>SUSY (non-Higgs) contacts: F. Paige, U. Nauenberg, J. Wells, J. Feng Rm 600B</p>	<p>Precision Electroweak, Strong Gauge Interactions and Other New Particles and Alternative Theories (joint session) contacts: T. Barklow, W. Marciano -- Rm 206</p>
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10:15-10:45 am Coffee Break

<p>SUSY Higgs (joint session) contacts: R. Van Kooten, H. Haber, F. Paige, U. Nauenberg, J. Wells, J. Feng -- Rm 600A+B</p>	<p>Top/QCD contacts: U. Baur, D. Gerdes, L. Orr, B. Schumm - Rm 208</p>	<p>Other New Particles and Alternative Theories contacts: J. Hewett, S. Tkaczyk -- Rm 206</p>
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12:30-2:00 pm Lunch (ICFA mtg in Rm 208)

2:00 pm Afternoon Session (Detector/Machine Issues)

<p>e^- . Heusch Rm 602</p>	<p>Tracking contacts: K. Riles, J. Jaros Rm 206</p>	<p>Vertex Detector contact: J. Brau Rm 600 A</p>	<p>Calorimetry contacts: R. Frey, A. Turcot, F. Porter Rm 600 B</p>	<p>Muon Detector contact: G. Fisk Rm 208</p>
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3:45-4:15 pm Coffee Break

<p>gamma, gamma-gamma contact: J. Gronberg Rm 602</p>	<p>Tracking contact: K. Riles Rm 206</p>	<p>Simulations, Calorimetry, and Vertexing (joint session) contacts: N. Graf, R. Frey, J. Brau - Rm 600 AB</p>	<p>Machine Teach-in Rm 208</p>
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6:00-7:00 pm Users meeting: Organizing Ourselves for the Next Steps to the LC -- Room 600AB

Groups Represented

- As expected, the constituency was much larger than at previous NLC workshops
 - 210 participants
 - More than half of those were **new participants**
 - Working groups were led by the traditional organizers
- Representation spanned the globe
 - Groups from across the US ... universities!
 - National labs: ANL, BNL, Cornell, FNAL, LBL, LANL, LLNL, SLAC
 - Foreign lab representation from DESY (Heuer), KEK (Kubo)
 - Foreign university groups represented from more than 20 countries
- In summary: we were very pleased with the **well balanced representation of the world HEP community**

Vox populi

- What the HEP community wanted was clear:
 - **Unbiased update** on the technology
 - **How** the technology will be chosen
 - Participation in the **physics** discussion
 - **Opportunities** to participate in detector WGs
 - Possibilities to participate in **LC R&D**
 - Machine Teach-in helped enormously
 - Several universities are (re-)vitalizing graduate programs in accelerator physics
- The **decision-making structure** was discussed:
 - At a panel discussion after comments by Tigner, Dorfan, Witherell, Rosen ... (with useful input from Trilling, and international consciousness from Heuer)
 - At a **town meeting** after the parallel sessions
 - At Baltay's "Now What" talk at the end
- A generally acceptable **steering group** structure emerged;
- Some **regional discussion groups** launched

The LC Steering Group

- **Consensus** among the lab directors:
 - Set up (now!) a body which can
 - Collect community input
 - Communicate with funding agencies
 - Effect more R&D money
 - Make some decisions
 - Structure:
 - **Led** by the US lab directors
 - Members from the North American **experiment** and **accelerator** communities
 - Representatives from **Europe and Asia**
- The audience generally agreed
 - Some questioned whether the lab directors should lead the SG; many others strongly supported this structure
- There was certainly consensus that the SG is needed now!

Tigner Spoke Towards Internationalization

- A *very* difficult topic
- Many commented on the **importance of facilitating international cooperation from the beginning**
- A reasonable model of how it will proceed:
 - Major collaborating countries will take significant share of “ownership” of LC and will have significant prerogatives in determining the technical design of the facility and the policies delimiting its operation.
 - Existing institutional structures will be the primary technical and manpower resources for design, construction and operation of the new facility
 - maintains the needed physics diversity in the program
 - carries the particle physics culture regionally
 - Determination and realization of the detector will be handled in a manner similar to previous ventures in international realization of accelerator facilities

What Next?

- Devise an acceptable and accountable mechanism for US participation in a completely internationalized project
- **Make the LC case** with the Administration, Congress, other Scientific Communities and the Public
- Preferably in an international context, devise, set up and carry out, before end 2003, a **decision mechanism for the choice of technology** on which to focus our efforts.
- **Support** and coordinate the R/D required for the American share of the LC accelerator facility
- Support and coordinate necessary detector R/D and US detector design activities
- Draft a **proposal** for an international LC facility to be sited in the US, including a technology choice.
- **Oversight** and support of the US share of LC creation and operation

Workshop Impact

- The Chicago Workshop has already realized:
 - Activity to create an oversight group
 - Restructuring of the informational databases
 - Larger (x2?) participation of US HEP community
 - Formation of new regional interest groups
 - ... **enthusiasm!!!**
- **Workshop Plans for near future:**
 - Europe : 12 – 15 April, St. Malo, France
 - U.S. : Late June, UC Santa Cruz
 - Asia : July , Tokyo
 - World LC Workshop: 26 – 30 August, Jeju Island, Korea