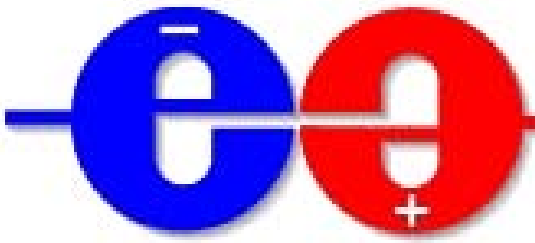

International Linear Collider Workshop

2005 International Linear Collider Physics and Detector Workshop

Second ILC Accelerator Workshop

Snowmass Colorado • August 14-27, 2005

Welcome and Overview

Motivation

- Remarkable progress in the past year toward the realization of an international linear collider:

  - choice of the technology

  - start of the Global Design Effort

  - clearer understanding of the essential, mutually supportive relationship of LHC and ILC physics -- HEPAP subpanel *Discovery* document

- Understatement: Many challenges

  - detailed design of the accelerator

  - full detector concepts

  - ever sharper physics arguments

  - funding

- At the Victoria meeting in July/August 2004, discussions in the American Linear Collider Physics Group and with international partners led to the proposal to host a fully international detectors and physics workshop

  -- duration long enough to facilitate substantial progress in addressing many of the challenges
- In the fall of 2004, ILCSC decided to hold the Second ILC accelerator workshop in conjunction with the Physics and Detector Workshop

- Workshops were designed expressly with international participation in all the advisory committees, and in the scientific program committees that organized the accelerator, detector, and physics activities
- Snowmass chosen, DOE and NSF funding proposals written, funding appeals, scientific committees organized, website developed, computer support team organized, secretariat organized, scientific program, special events, meeting room assignments, ….

- Last count: more than 640 registered

Charge

- Primary ILC accelerator goal: define an ILC Baseline Configuration Document (to be completed by the end of 2005) and an R&D plan. WG's will work toward agreement on the collider design, develop paths to resolution of outstanding issues, start documentation of the BCD, and identify critical R&D topics and timescales
- Advance and sharpen ILC physics studies, including precision calculations, synergy with the LHC, connections to cosmology and astrophysics, and relationships to the detector design studies

Charge (contd.)

- Develop detector design studies with firm understanding of the technical details and physics performance of candidate detector concepts, the required future R&D, test beam plans, machine-detector interface issues, beam line instrumentation, cost estimates, and other aspects
- Facilitate and strengthen the broad participation of the scientific and engineering communities in ILC physics, detectors, and accelerators, and engage the greater public in the excitement of this work

Plan of Scientific Activities

- Accelerator

  - Working Groups established for the 1st ILC workshop at KEK form the basis of the organizing units through Snowmass: Low-Emittance Transport and Beam Dynamics, Linac Design, Sources, Damping Rings, Beam Delivery, Superconducting Cavities and Couplers, Communications and Outreach

  - 6 Global Groups formed to work toward a realistic reference design: Parameters, Controls & Instrumentation, Operations & Availability, Civil & Siting, Cost & Engineering, and Options

- Barry Barish will speak this morning about the Global Design Effort

- ILC working groups will present introductory overviews in plenary sessions this afternoon

- lunchtime accelerator tutorials in Hoaglund -- *accelerator school* -- begin Tues 8/16 and continue through Thurs 8/25; bring your lunch

- very ambitious schedule leading to plenary ILC Global Group summaries this Friday AM

- accelerator WG summaries this Fri 1:30 PM

- Detectors

  - 3 Detector Concept Studies formed around complementary philosophies:

    GLD (largest, with TPC tracking)

    LDC (TPC tracking)

    SiD (Silicon Detector)

  - Concepts will be introduced in plenary sessions this afternoon 8/15

  - Major opportunity to facilitate drafting the Concept detector outline documents before LCWS06 in Bangalore (March 9 - 14, 2006)

Detectors -- questions and ambitions:

- R&D requirements
- particle flow calorimetry

  special session Mon AM 8/22
- vertex detection at small radius
- machine-detector interface issues (MDI)

  joint MDI/accel/Concepts session 8/17
- agreement on feasible IR parameters
- two high energy IR's and detectors?

  plenary session Thur 8/18 on the case for two detectors
- options (e^+ polarization, $\gamma\gamma$, $e\gamma$, e^-e^-, ….)

- Physics

  - Talks this AM by Joe Lykken and Peter Zerwas -- physics at the ILC and the LHC

  - 4 Physics working groups: Higgs, SUSY, BSM, and Top/QCD, plus 3 cross-cutting *Special Topics*: Cosmology Connections, LHC/ILC Connections, and precise high-order calculations (Loopfest)

  - Mini-plenary for Physics WGs Tues 1:30 PM

  - Loopfest Thurs and Fri this week 8/18 - 19

  - Cosmology and the ILC -- Wed 8/24

Partial menu of physics topics

- Physics benchmarks

  - Tues. afternoon 8/16 plenary
- Higgs mechanism: what exactly will precise measurements at the ILC teach us?
- SUSY at LHC & ILC: determine masses and other parameters for focus point and other Snowmass points and slope scenarios
- Extra-dimensions & strings
- Precise high-order calculations to match the expected high precision of the ILC data
- LHC+ILC: concurrent operations case
- What ILC detector capabilities are needed?

Summary Talks

- Accelerator baseline document discussion on Friday 8/26
- Physics and detectors summary talks on Friday 8/26 and Saturday 8/27

Much to do!

Communications,Education,Outreach

- Dark Matter Café and Quantum Universe Exhibit, Snowmass Mall, Fri - Sun, 8/19 - 8/21, volunteers needed, see H. Murayama
- Workshop on Dark Matter and Cosmic Ray showers for high school teachers, Fri 8/19
- CR shower study on the Aspen Mall, Saturday 8/20; volunteers needed - see Marge Bardeen
- *Physics Fiesta*, Roaring Fork High School in Carbondale, Sunday 8/21, 1 - 4 PM; volunteers needed - see Marge
- More in Judy Jackson's talk this AM

Public Lectures

6:30PM

8/17, Aspen, Young-Kee Kim

$E = mc^2$: Opening Windows on the World

8/22, Snowmass, Hitoshi Murayama

Seeing the Invisibles --Challenge to 21st Century Particle Physics and Cosmology

Special Evening Events

- ILC Industry Forum Tues 8/16, 7:30PM
- Special Forum Tues 8/23, 7:30PM:
  Challenges for Realizing the ILC: Funding, Regionalism, and International Collaboration
- Workshop Dinners: Thurs 8/18 and Wed 8/24 -- tickets in registration packet. Additional tickets are available for purchase -- head count for 8/18 requires purchase by

  NOON TODAY

Funding Support

- Generous DOE and NSF grants
- Essential financial contributions from Argonne, Cornell, BNL, LBL, and JLAB
- Funds from URA and Stanford University

  -reception Sunday, 8/14
- DESY, PPARC (UK), and IN2P3 (France) support for participants from Europe
- In-kind contributions from

  - FNAL (secretariat, members of the computer support team, equipment)

  - SLAC (proceedings and members of the secretariat and computer support team)

Heavy Lifting

- Tremendous contributions of talent and time from many individuals
- Local Organizing Committee members:

  - foremost: my co-Chair Uriel Nauenberg and his crew at University of Colorado,

  Valerie Melendez and webmaster Will Ruddick

  - Jim Brau (Oregon) and Mark Oreglia (Chicago), ALCPG co-Chairs

  - Nan Phinney (SLAC) and Shekhar Mishra (FNAL), ILC liaisons on the LOC plus

  - Steve Holmes (FNAL)

Executive Committee

Barry Barish

Edmond Berger

James Brau

Sally Dawson

Rolf Heuer

David Miller

Shekhar Mishra

Uriel Nauenberg

Mark Oreglia

Hwanbae Park

Michael Peskin

Tor Raubenheimer

Hitoshi Yamamoto

Organization: 4 Working Committees

Detectors	Accelerator
Philip Bambade	David Burke
Ties Behnke	Jean-Pierre Delahaye
Tiziano Camporesi	Gerald Dugan
John Jaros	Hitoshi Hayano
Dean Karlen	Steve Holmes
Akiya Miyamoto	Olivier Napoly
Mark Oreglia (Chair)	Kenji Saito
Daniel Peterson	Nick Walker
Harry Weerts	Kaoru Yokoya
Satoru Yamashita	

Working Committees (contd.)

Physics	Education & Outreach
Sally Dawson (vice-Chair)	Marjorie Bardeen
Jonathan Feng	Neil Calder
Rohini Godbole	Ulrich Heintz
Norman Graf	Judy Jackson
Howard Haber	Hitoshi Murayama (Chair)
Kaoru Hagiwara	Gregory Snow
Joseph Lykken	
Michael Peskin (Chair)	
James Stirling	
Rick Van Kooten	
Peter Zerwas	

Working Groups

- International conveners of the working groups, with representation from all regions, are the unsung heroes and heroines; apologies for not listing all of them by name
- Agendas of the working group programs can be found from links on the workshop program page:
  http://alcpg2005.colorado.edu:8080/alcpg2005/program/

~22 Meeting Rooms

- See the excel spread sheet on the web page for assignments. There will be updates, additions, changes. Daily updates, as needed, will be posted also at the Secretariat and in the Conference Center
- Mark Oreglia did his best with a complex mix of competing requirements; his apologies if your group did not get a terrific room
- Groups in need of special rooms should fill out a request form in the Secretariat (yellow form)
- LCD projectors and screens; overhead projectors (by special request)
- File transfer to be done via USB thumb drives

Dedicated Secretariat

- Team headed by Cynthia Sazama (FNAL); plus Maura Chatwell, Albe Larsen, and Naomi Nagahashi (SLAC) and Carol Angarola, Jody Federwitz, and Suzanne Weber (FNAL)
- Main office: Top of the Village (ToV) Slope 210
- Hours: 8:00 AM - 6:00 PM, Mon - Fri
  8:00 AM - 1 PM Sat 8/20
- Registration in Conference Center today 8/15; in ToV Slope 210 after today

Computer Facilities

- Support team headed by Ray Helmke (Cornell); deputy John Urish (FNAL); team members: David Tang & Quinton Healy (FNAL), Mike DiSalvo & Ken Zhou (SLAC), Bryan Abshier (LBL), Andrew Hahn, Joseph Proulx, Martin Nagel, & Jason Gray (U Colorado)
- Descriptive document prepared -- on web site; facility was set up and tested last week
- Computer rooms at ToV - Trails 109,108, 105; daily 8 AM - 10 PM
- Wireless access; some hardwired connections; principally a laptop based facility; 18 Windows PC's on loan from FNAL

Proceedings

- Files of all talks linked on the web pages
- Proceedings will appear on the SLAC Electronic Conference Proceedings Archive, eConf
- A CD will be produced of written contributions
- Deadline -- November 30
- See the Proceedings link on the front page of the web site for detailed instructions and page limits

Web Site Advisory

- The web site may report errors when too many users access it at the same time
- The problem is one of database transaction locking. If many users hit the site at the same time (with the same request), a small fraction may see an error message
- If you encounter an error message - please refresh your browser
- If the problem persists, send e-mail to Will Ruddick, webmaster@alcpg2005.colorado.edu

L'Envoi

- Reviewed: Motivation, Charge, Plan of Scientific Activities on the accelerator, detector, and physics fronts, Communication, Education, and Outreach Activities, Funding Support, Computing and Secretariat Teams and their hours of operation
- Workshop is now in your capable hands:

design the accelerator

flesh out the detectors

hone the physics reasoning

engage your fellow citizens