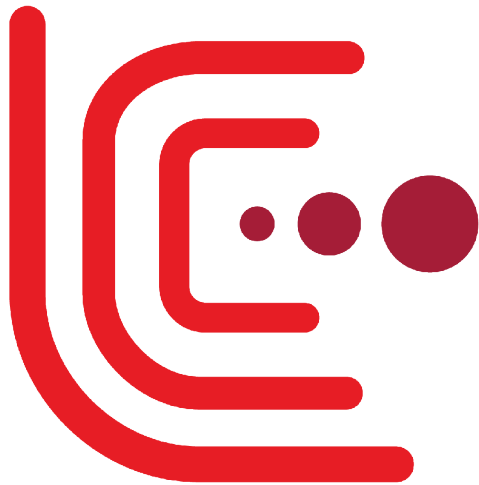


Report from the ILC Parameter Joint Working Group



LCForum

Bonn, April 29, 2014

J.List (DESY)

on behalf of the parameters group

A New Parameters Group for the ILC

The ILC parameter working group *reports to the LCC Directorate*. It consists of *members from both the ILC accelerator and the physics & detector groups* where each team selects a co-convenor for this working group.

=> Acc: Nick Walker (co-chair), Kaoru Yokoya, Jie Gao
P&D: Jim Brau (co-chair), Tim Barklow, Keisuke Fujii, JL

This working group *prepares information on ILC machine parameters and staging scenarios* as well as potential upgrade paths in a form readily usable by the LCC. In doing so, the WG will take into account *technical machine constraints and physics and detector needs regarding the fundamental ILC machine parameters such as energy, luminosity, crossing angles, etc.*

The first task for the working group is to *prepare multiple scenarios for staging up to about 500 GeV*. The report should contain the pros and cons of each scenario as well as luminosities needed at each energy to produce corresponding physics results.

Proposed Timeline

- March: charge formulated
- May: plenary discussion (2h) at AWLC, Fermilab
=> community input!
- June – September: prepare first draft report
- October: presentation of draft with discussion at LCWS in Belgrade
=> community input!
- November/December: finalize draft

Key Questions

- Top baseline energy: 500 GeV? 550GeV?
 - large impact on ttH
 - Tunnel length to be fixed to +/- 300m by end of year
 - Delicate political issue – need extremely strong physics case and willingness for compromise
- Physics case for running below 250 GeV
 - GigaZ & WW threshold
 - which luminosities & polarisations are really required?
 - What is the priority?

Key Questions – cont'd

- How much luminosity needed at 350 GeV for top physics?
 - Does this contribute to Higgs measurements?
- How much luminosity needed at 250 GeV?
 - Initially?
 - After running at higher energies?
- How essential is positron polarisation for Higgs physics at 250 GeV?

Example Running Scenarios

- a) 250 fb⁻¹ @ 250 GeV, 500 fb⁻¹ @ 500 GeV
- b) 250 fb⁻¹ @ 250 GeV, 500 fb⁻¹ @ 550 GeV
- c) 250 fb⁻¹ @ 250 GeV, 1000 fb⁻¹ @ 500 GeV
(for comparison with scenario b)
- d) 100 fb⁻¹ @ 250 GeV, 200 fb⁻¹ @ 350 GeV, 500 fb⁻¹ @ 500 GeV
- e) 100 fb⁻¹ @ 250 GeV, 200 fb⁻¹ @ 350 GeV, 500 fb⁻¹ @ 550 GeV
- f) 25 fb⁻¹ @ 250 GeV, 350 fb⁻¹ @ 350 GeV, 500 fb⁻¹ @ 500 GeV
- g) 500 fb⁻¹ @ 250 GeV, 500 fb⁻¹ @ 500 GeV
- a*) 350 fb⁻¹ @ 350 GeV, 500 fb⁻¹ @ 500 GeV