

Polarisation meeting, Sept 23 2011

Jenny, Gudi, Sabine, James, Konrad, Jean-Jacques, Lucie

How well can the machine do? Level of polarization and precision.

Dedicated short document with machine capabilities

Konrad will prepare: phase 1 and phase 2

Precision of knowledge on polarization (info from polarimeter + measurement at the experiment), and precision that can be achieved.

Estimate and error on depolarization.

---

---

WW measurement, use all helicity combinations, to measure luminosity.

For the CDR, possibility to make an estimate based on ILC work.

WW total cross section and angular distribution of the W's. Semileptonic for the angular distr. Hadronic for total rate. (Thesis Ivan Marchesini)

---

---

Section in chapter 1 on physics potential.

What to include?

Best example physics process with electron polarization?

- Many channels with WW background
- Relate physics measurement precision (In absence of polarization) to error due polarization measurement
- SUSY example with **chargino** or slepton
- Other example from extra dimension
- Contact interaction e+e- and top quarks, or bhabha

- **Very heavy  $Z'$  in left-right model** => fermion pair production (electrons or muons)

---

---

Include also general remarks.

See also Tony Harting at LCWS11 (for depolarization)

---

---

The work, who and what?

Chargino would require cross section measurement and asymmetries. Errors from full simulation without polarization can possibly be defactorised from errors due to knowledge of polarization. (Gudi and Jenny to write a plan with technical work objectives)

Fully reconstructed events on chargino => reweight for polarization => OK for Xsection meas.

$Z'$  to leptons => can be done in fast simulation, but also no big issue in full simulation. Issue of generator to be solved. Work plan: angular distribution of outgoing leptons, differential cross section and how well they can be measured. (Sabine will try to give some guidance). We also need to know about the most important backgrounds.

WW study shall get the highest priority.

Input Marchesini thesis and a note. Jenny will provide the information currently already available.

---

---

Generator issue for  $Z'$ : Can a list of equations be used as an input? Find a relevant process in Whizard (Gudi can ask the author).

