WG5 messages
Tuesday 20 September

D. d'Enterria – Measuring the electron Yukawa coupling to the Higgs

FCC-ee can provide the by far most precise measurement of the e- Yukawa by sitting at E_{cm}= m_{Higgs} =125 GeV
Large background is a concern and must be suppressed by suitable cuts and algorithms (e.g. selection of gluon jets) and by monochromatization ($\sigma_{Ecm} \sim \Gamma_{Higgs}$ = 4.1 MeV instead of ~80MeV in collisions)

A. Blondel – Monochromatization monitoring

Plenty of dimuon events contain superb information of collision energy spread with and without monochromatization, and mean energy difference between electron and positron beams – check of energy losses.
***much* slower at 125 GeV (x-section decreased by fact 140 x luminosity down by factor 10)**

Recommandation to test the monochromatization scheme early-on during highest-luminosity Z running
➔ impact on optics design and question whether beamline footprint can be held constant)

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. Faus-Golfe Towards monochromatization optics¶

- **approach: modify the final-focus bending for all energies and add final-focus quadrupoles to launch the monochromatization**
- **with crab cavities reduce bunch length (different arc optics) or increase betay***
- **one could also resonantly create dispersion from the arcs**

H.-P. Jiang First draft optics

- draft optics with IP dispersion created by addt'l bends and quad's in the final focus
– check if synchrotron radiation photon energies would be OK for ttbar running
– emittances need to be updated for each working point, and both bunch population and IP dispersion should be optimized
-- decreasing betax* should also be considered

P. Raimondi Monochromatization with chromatic waist shift

– monochromatization with chromatic waist shift could be simulated with GuineaPig to explore useful parameter range and possible gain
- other alternative approaches include change of partition number and/or Robinson wigglers