Choice of crossing-angle planes

Report from discussions at the LCC

R. Assmann, SL/AP

6th Meeting of the Ad-hoc Working Group on LHC Machine-Experiment Parameter and Signal Exchange

18.11.02

Final discussion at LCC on November 6th:

- Review of recent results on energy deposition (D. Macina)
- Beam-beam compensation issues (W. Herr)
- Diffusion coefficients for different crossing planes (F. Zimmermann)
- The wire beam-beam compensation (J.P. Koutchouk)

Minutes will be available at:

http://lhc.web.cern.ch/lhc/lcc.htm

LCC observations:

The new energy deposition results show no relevant difference between crossing planes any more:

No preferable crossing plane can be identified.

The horizontal-vertical crossing scheme is shown to be required for compensating harmful long-range BB effects (slide W.Herr):

The horizontal-vertical crossing scheme in IP1/5 is the baseline solution for LHC.

The race-track beam screen is compatible with this crossing scheme and will be installed for start-up.

The orientation of beam screen will be decided before installation (2004/05?). Further BB studies ongoing.

Crossing planes fixed after this decision (not interchangeable between IP1 and IP5).

LCC observations continued…

A marguerite shape will be further investigated and could be installed after initial running, if required.

Initial running will have $L < 5\ 10^{33}$ (certain), likely $< 3\ 10^{33}$. (limit due to installation schedule of dilution kickers)

Installation time is estimated to be 6 months, e.g. it would fit into a normal shutdown (crash program).

Potential change of crossing plane issue for luminometer.

The wire compensation scheme will potentially help to compensate long-range beam-beam effects:

This scheme is not part of the baseline LHC solution.

It can be installed during a normal shutdown, if required.

This device will be adapted to whatever crossing scheme is implemented.