2nd ECFA/DESY Study on Physics and Detectors for a Linear Electron-Positron Collider

LAL - Orsay - France, April 5-7, 1998

Date : April 7, 1998 - 12:50

Group 5 - Machine-Detector Interface

DETECTOR - MACHINE INTERFACE

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WORK PLAN → JUNE MEETING

H. Burkhardt	CERN 3
W. Bialowons	DESY
R. Brinkmann	DESY
● J. Butterworth	UCL
A. Drozhdin	FNAL
S. Fartoukh	Saclay
N. Holtkamp	DESY
● H. Leeuen	DESY
N. Mokhov	FNAL
U.-C. Müller	DESY
● O. Napoly	Saclay
M. Sachwitz	DESY/Z
U. Schneekloth → DESY	
H.-J. Schreiber	DESY/Z
S. Schreiber	DESY
D. Schulte	CERN
R. Settles	MPI
K. Sinram	DESY
● N. Walker	DESY
K. Zapfe-Düren	DESY

* TASKS FOR JUNE MEETING

⇔ STAY WITH 500 GEV REF. DESIGN

⇔ NEW PARAMETER SET

[BRINKMAN STAGE II

→ $\mathcal{L} \simeq 3.10^{34}$

⇔ RECALCULATION / REFINEMENT OF CDR CALCULATIONS

- o NEW IP PHASE SPACE
  - → BEAM-BEAM BACKGROUNDS
- o NEW (OPTIMISED) BEAM DELIVERY SYSTEM
  - → MACHINE RELATED BACKGROUNDS

* NOTE: NO SUPRISES EXPECTED

BEAM-BEAM BACKGROUNDS

⇔ LOW ENERGY DISRUPTED e^+ & e^-

⇔ BEAMSTRAHLUNG γ

⇔ NEUTRONS FROM γ DUMP

⇔ e^+e^- PAIRS

⇔ HADRONIC JETS

→ • MASK OPTIMISATION

ACCELERATOR BACKGROUNDS

⇔ ϕ 2cm → 1cm VTX

→ • SYNCHROTRON RADIATION — DIPOLES / QUADS

→ • COLLIMATION

⇔ BEAM-GAS SCATTERING

→ • VACUUM SYSTEM

⇔ MUONS

→ • COLLIMATION / FF MODIFICATIONS

⇔ COMPTON SCATTERING OF BLACK BODY RADIATION

EVENT GENERATION

Instrumentation Issues

NB work in progress

- (Fast) Luminosity Monitor
- Precise Energy Measurement ($\frac{\delta E}{E} \sim 10^{-4}$)
- Compton Polarimeter

Component Issues

- Final Doublet Quadrupoles
  - Supports/Movers
  - Integration of FFDBK Kickers/BPMs
- Masking System
- Beam Pipe
- Vacuum System

Civil Engineering

- Installation
- Surveying
- Access

To Boldly Go .....

Beyond June Meeting

⇔ Request for Input/Clarification

① < 500 GeV C.o.M.

- Top
- Higgs
- Z_0

} Luminosity/Energy ???

② 2nd IR

- γ-γ
- e^-e^-
- e^-e^+

Absolutely Necessary ⇕ Would be nice ⇕ Worst of time/money

???

Implications

⇔ Tesla e^+ source considerations

⇔ Tunnel infrastructure/site layout

⇔ Man Power (~1 man year?)

⇔ $$$!