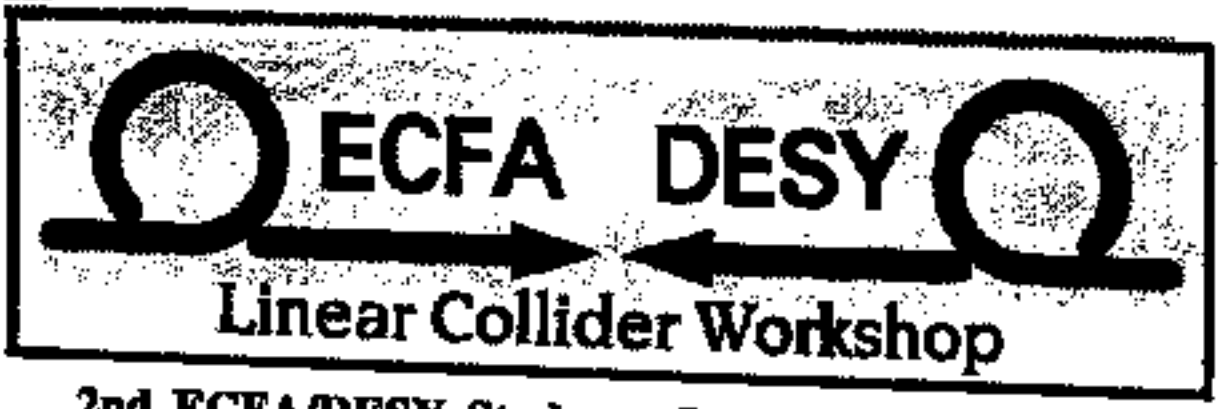
S21



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 - 12:20

Group 4 - Detector Performance + R&D

leader's talk = R. Settles

Ron Settles/MPI-Munich

7.4.98 in Oslo

DETECTOR PERFORMANCE and R&D ISSUES

To structure the discussion:

TRACKING (incl. VERTEXING)

CALORIMETRY (incl. LUMI. MEAS.)

MUON SYSTEM (incl. FORWARD DET.)

DAQ/TRIGGER (incl. ANALYSIS FARM)

ANALYSIS TOOLS (DET. SIM. GROUP)

BACKGROUNDS (MACH. - DET. INTERF. GROUP)

→ IMPORTANT TO GET FEEDBACK FROM THESE TWO GROUPS !

PRIORITIES:

1) BACKGROUNDS → STUDY ALTERNATIVE S.D. TECHNOLOGIES

2) TOOLS → TO OPTIMIZE S.D. DESIGN

FOR TODAY'S MEETING,

TRACKING

Chris Damerell (CCD)
Ron Settles (TPC)
Magali Gruwe (GEM)
Elisabeth Rulikowska (Gas Studies)
Marco Battaglia (Vertex)

CALORIMETRY

Volker Korbel (Shaslik / Crystals
Paolo Checchia (Shaslik R&D)

Peter Steffen (Energy Flow)

MUON

DAQ/TRIGGER

Rolf Nahnhauer (Fibre Trigger

SIMULATION

Silhacence Aid

CHRIS DAMERELL

SUGGESTED ORGANISATION FOR R&D STUDIES

IDEAS FOR CCD VERTEX DETECTOR

PAUL COLAS

MICROMEGAS AS ALTERNATIVE TPC R.O
- STUDIES IN SACLAY

MAGALI GRUWÉ

GAS ELECTRON MULTIPLIER

RS

TPC STUDIES

MARCO BATTAGLIA

STUDIES FOR APS VERTEX DETECTOR

PETER STEFFEN

ENERGY-FLOW STUDIES

PAOLO CHECCHIA

SHASLIK R&D

VOLKER KORBEL

CALORIMETER STUDIES

ELISABETH RULIKOWSKA

STUDIES FOR GASEOUS DETECTORS

ROLF NAHNHAUER

FIBRE TRIGGER

FURTHER STUDIES, R&D (RANDOM THOUGHTS)

- ANOTHER ITERATION ON DETECTOR DIMENSIONS
- BACKGROUND STUDIES γ's, n's, ...
  EFFECT ON ALL SUBDETECTORS
- UDET
  APS or CCD ?
  1 cm BEAMPIPE? ← MACHINE?
- INT. TRACKER
  HOW TO GET σ GRANULARITY?
- INT. Si LAYER
  CAN WE ALIGN? INT./EXT. GEM LAYER
- TPC OTHER TECHNOLOGY?
  OTHER R.O. CHAMBERS ?
  OTHER GAS ?
  FIELD HOMOGENITY
- TRACKING
  SYST. ERROR $< 10\mu m$ ⇒ CHALLENGE
- ECAL
  IMPROVE $\frac{\delta E}{E}$, KEEPING SOFTWARE COMPENS.
  GEANT ENFLOW STUDIES
- HCAL
  GEANT INSIDE/OUTSIDE STUDIES
- MUON
  ANALOG R.O. OF RPC? OTHER R.O.?

"CONCLUSIONS"

WHAT WAS MISSING?

MUON

TRIGGER/DAQ

"TO DO" LIST

- GET INFO ON BACKGROUNDS
  - → SEE EFFECTS ON REF. DET.
- CONTINUE STUDY OF ALTERNATIVE TECHNOLOGIES
- HAVE DEDICATED SESSION AT NEXT WORKSHOP ON PHYSICS→DET. STUDIES

R & D WE HEARD ABOUT

CCD
THIN ADS
GEM
MICROMEGAS
SHASLIK
CRYSTALS

CANNOT IDENTIFY R & D "NEEDED" UNTIL WE GET FULL PICTURE

WE ARE STILL GETTING ORGANIZED