

SIMDET_v04

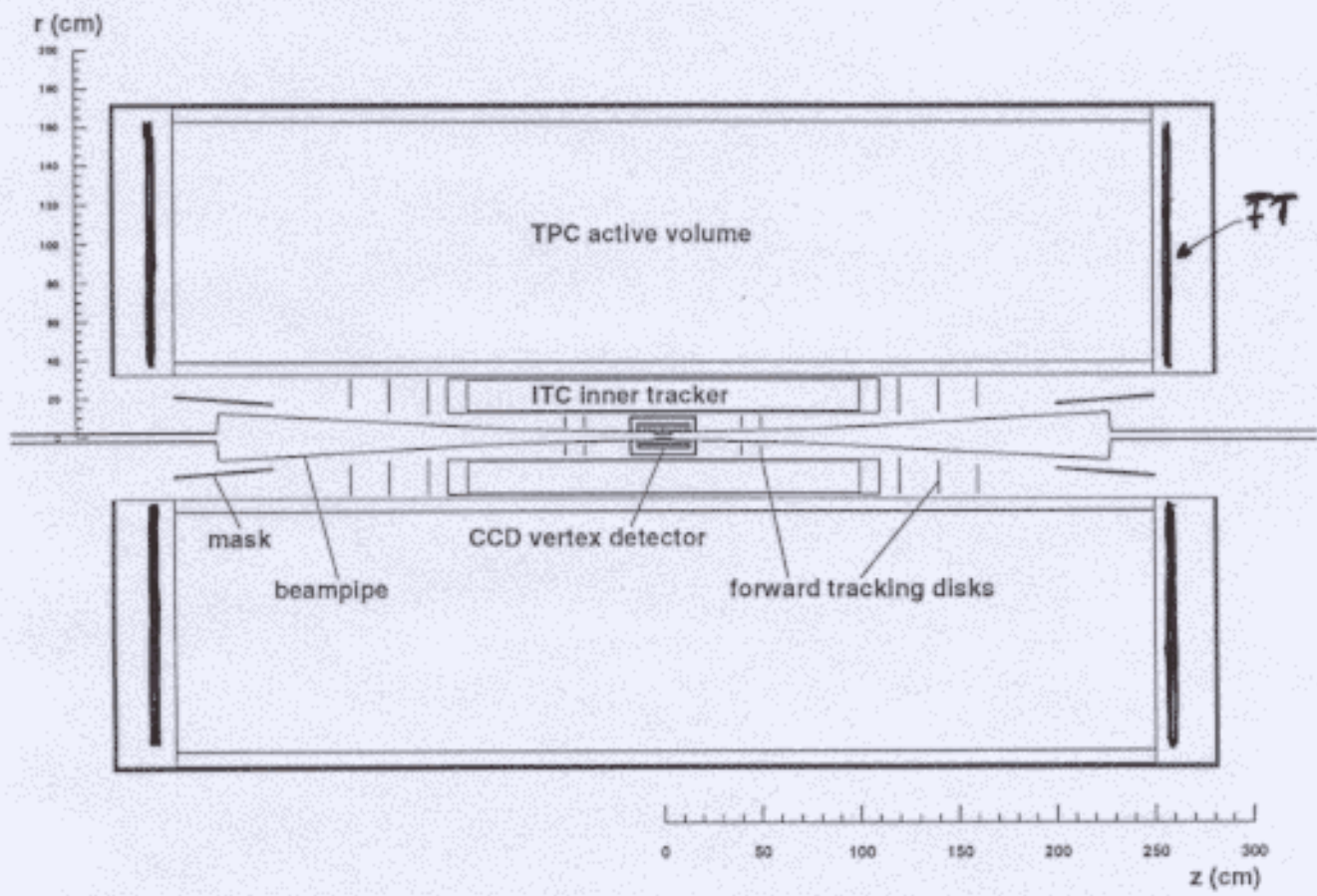
a parametric Monte Carlo for a TESLA Detector

Status: Sept. 2000

Detector: TDR

● Tracking System:

- TPC
- forward tracker
- inner tracker
- forward disks
- vertex detector (CCD vs. APS)



Klaus M. provided (BRAHMS)

- $\sigma(1/p_t)$
 - $\sigma(\theta)$
 - $\sigma(\phi)$
 - $\sigma(DCA_{xy})_{cc\bar{c}}$
 - $\sigma(DCA_z)_{cc\bar{c}}$
- } $f_{kt}'s(\theta, p)$

→ Example

→ parametrized → SIMDET

APS: Marco B.

→ routine for $\sigma(DCA_{xy})$ and $\sigma(DCA_z)$

Performance

of tracking system:

$e^+e^- \rightarrow H(120) Z$ at $\sqrt{s} = 500$ GeV

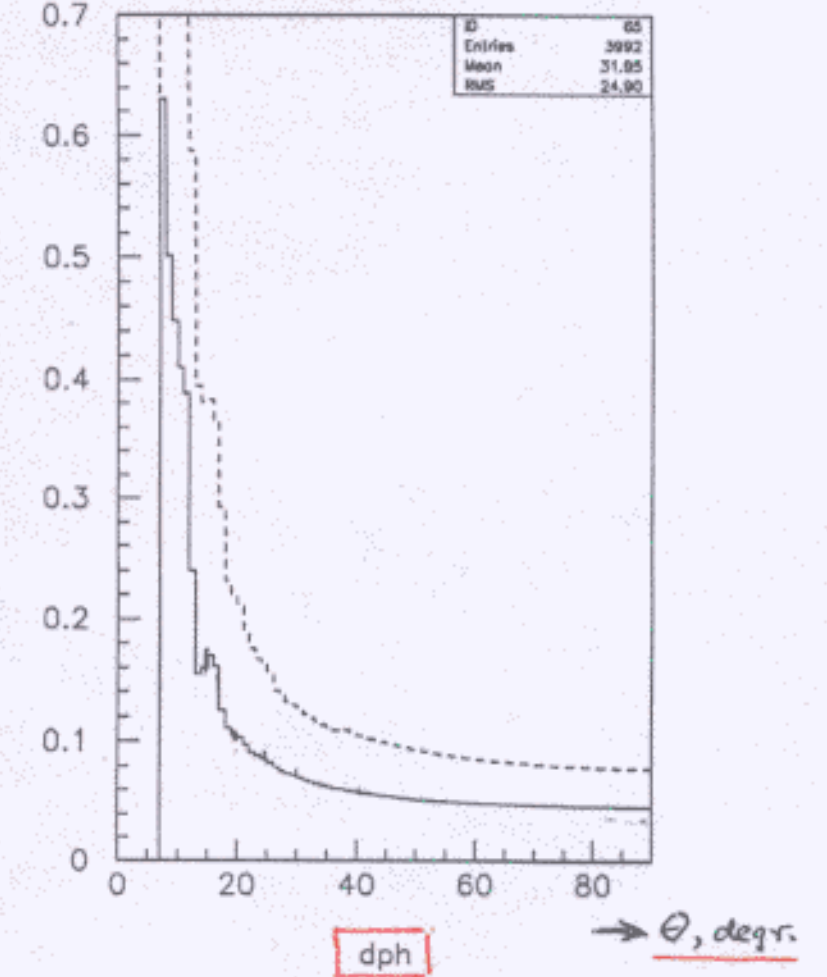
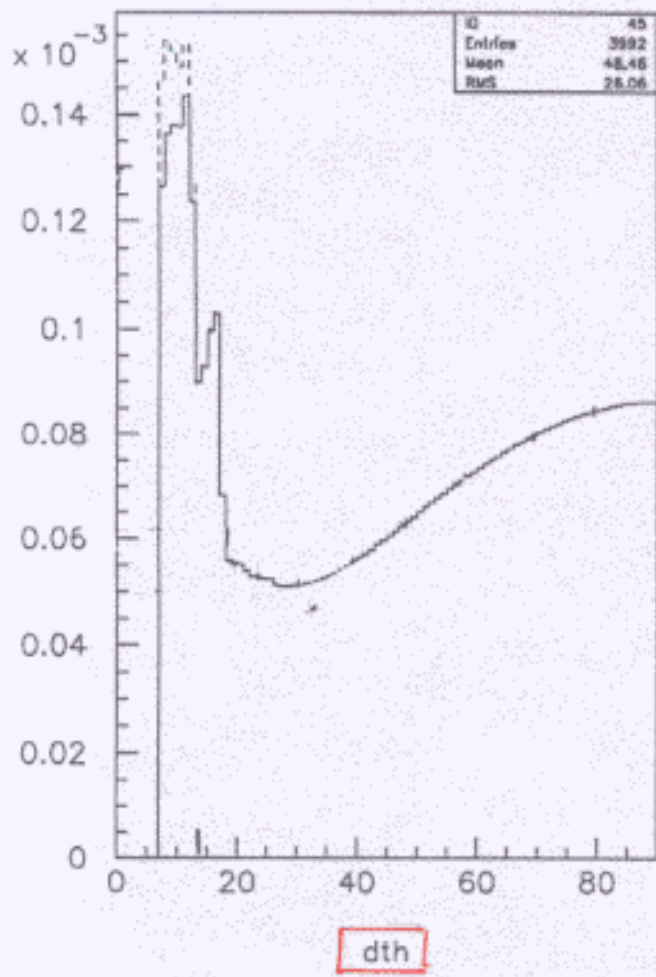
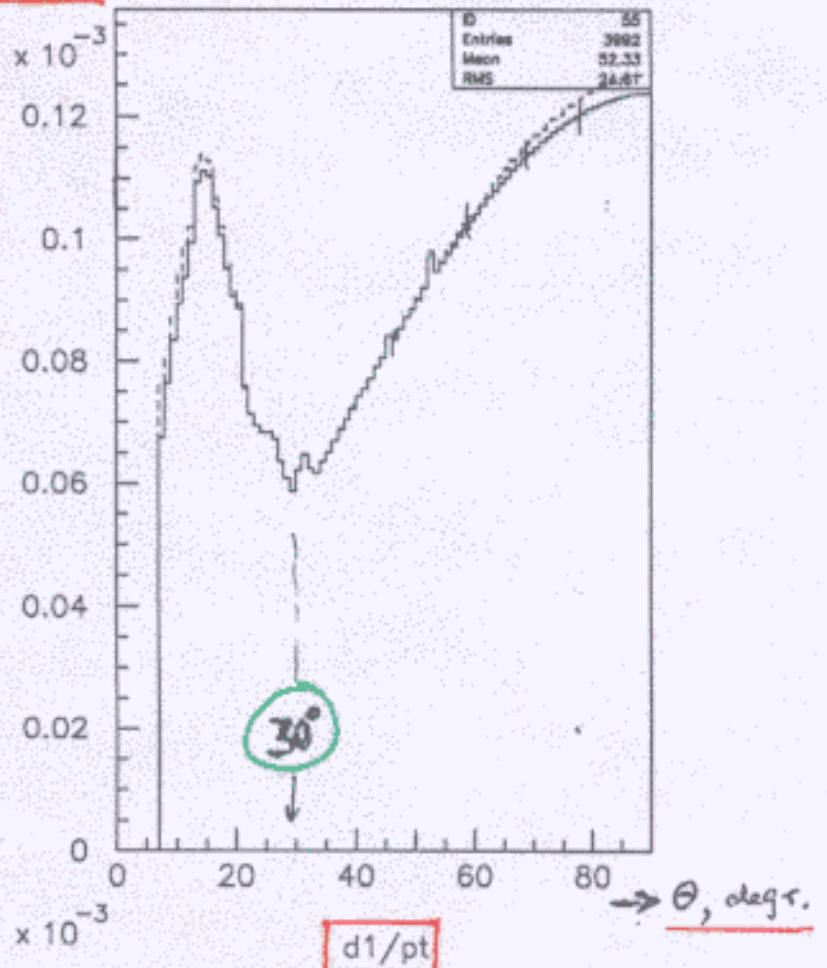
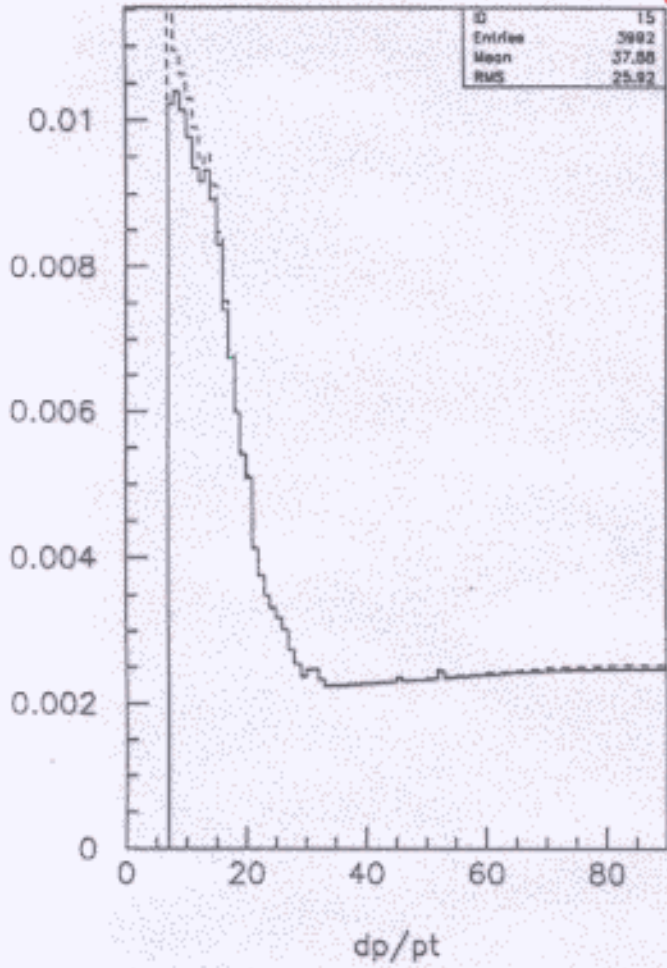
↳ $\mu^+\mu^-$

↳ 2 jets

--- without IP constr.

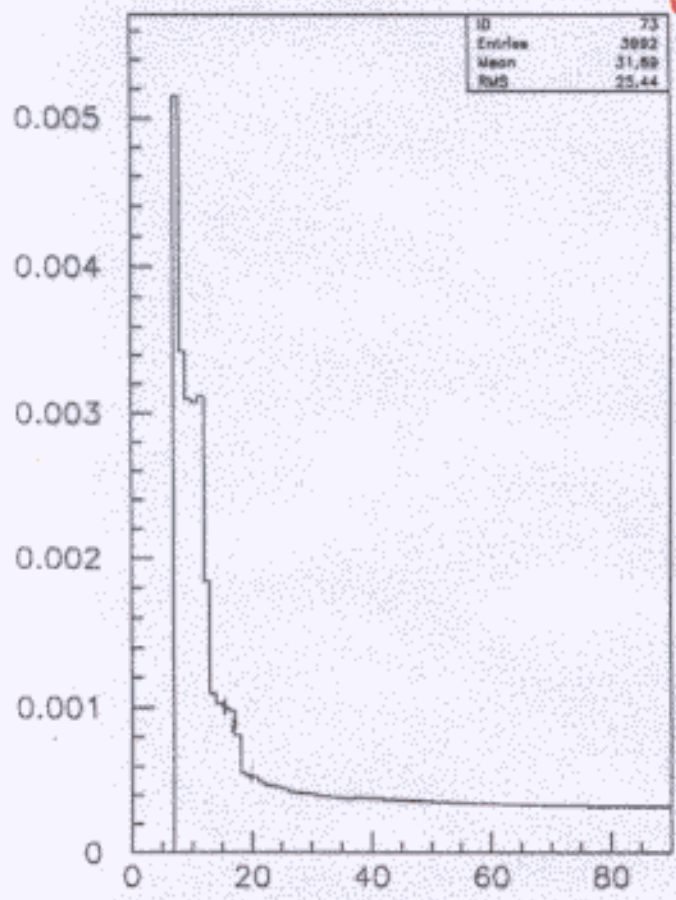
— with IP constr.

20 GeV

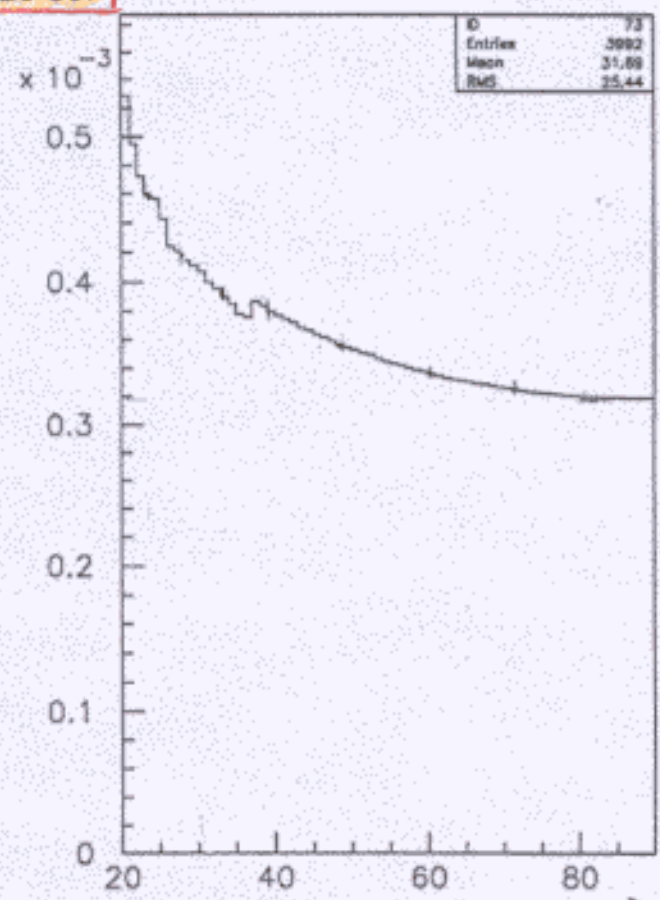


CCD version

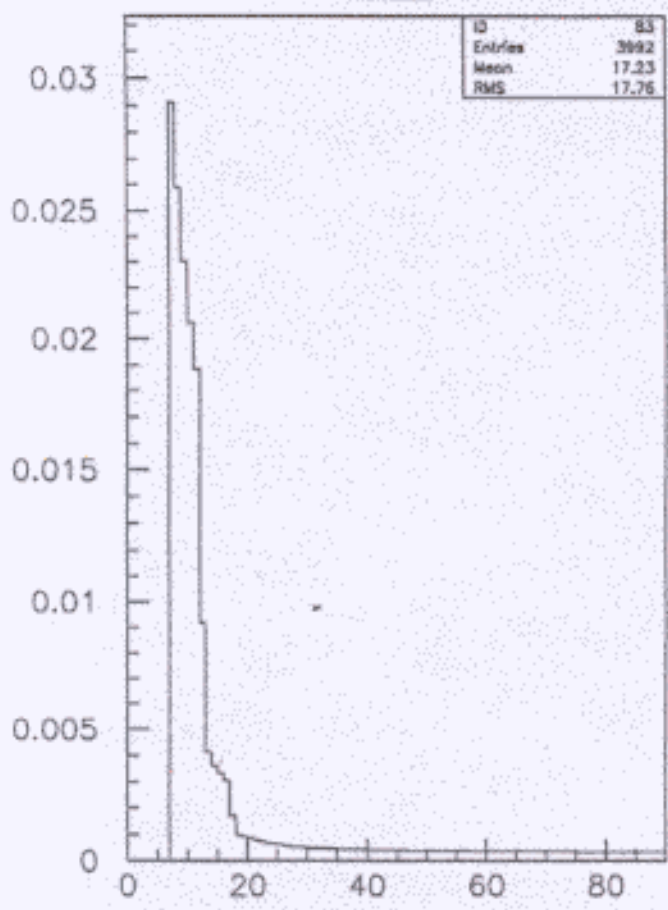
20 GeV



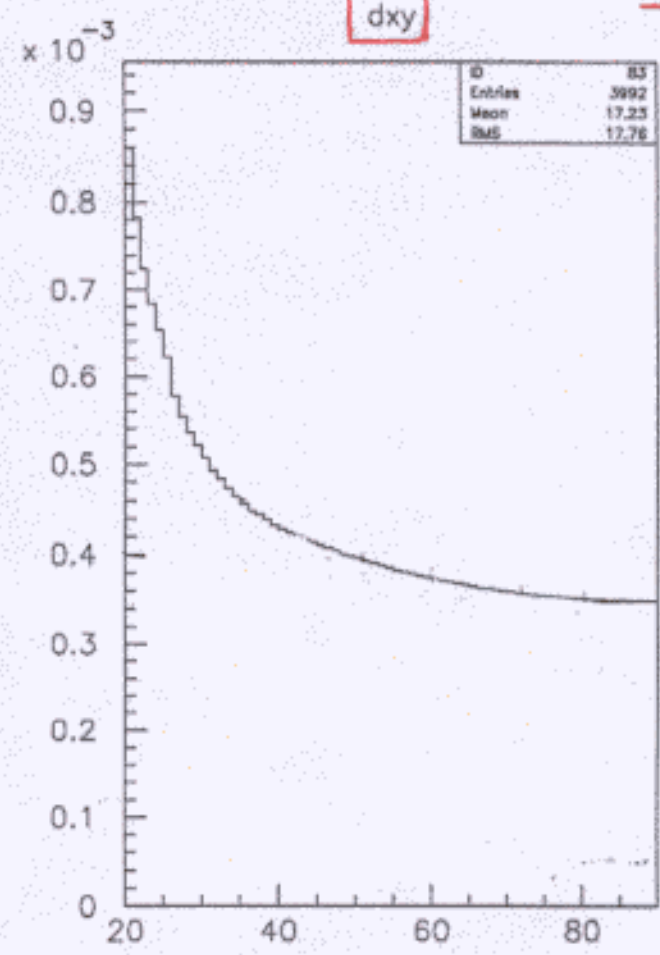
dxy



$\rightarrow \theta, \text{degr.}$



dz



dz

$\rightarrow \theta, \text{degr.}$

$$e^+e^- \rightarrow H(120) Z$$

$$\begin{matrix} \searrow & \rightarrow & \searrow \\ 2 \text{ jets} & & \underline{\mu^+ \mu^-} \end{matrix}$$

at $\sqrt{s} = 500 \text{ GeV}$

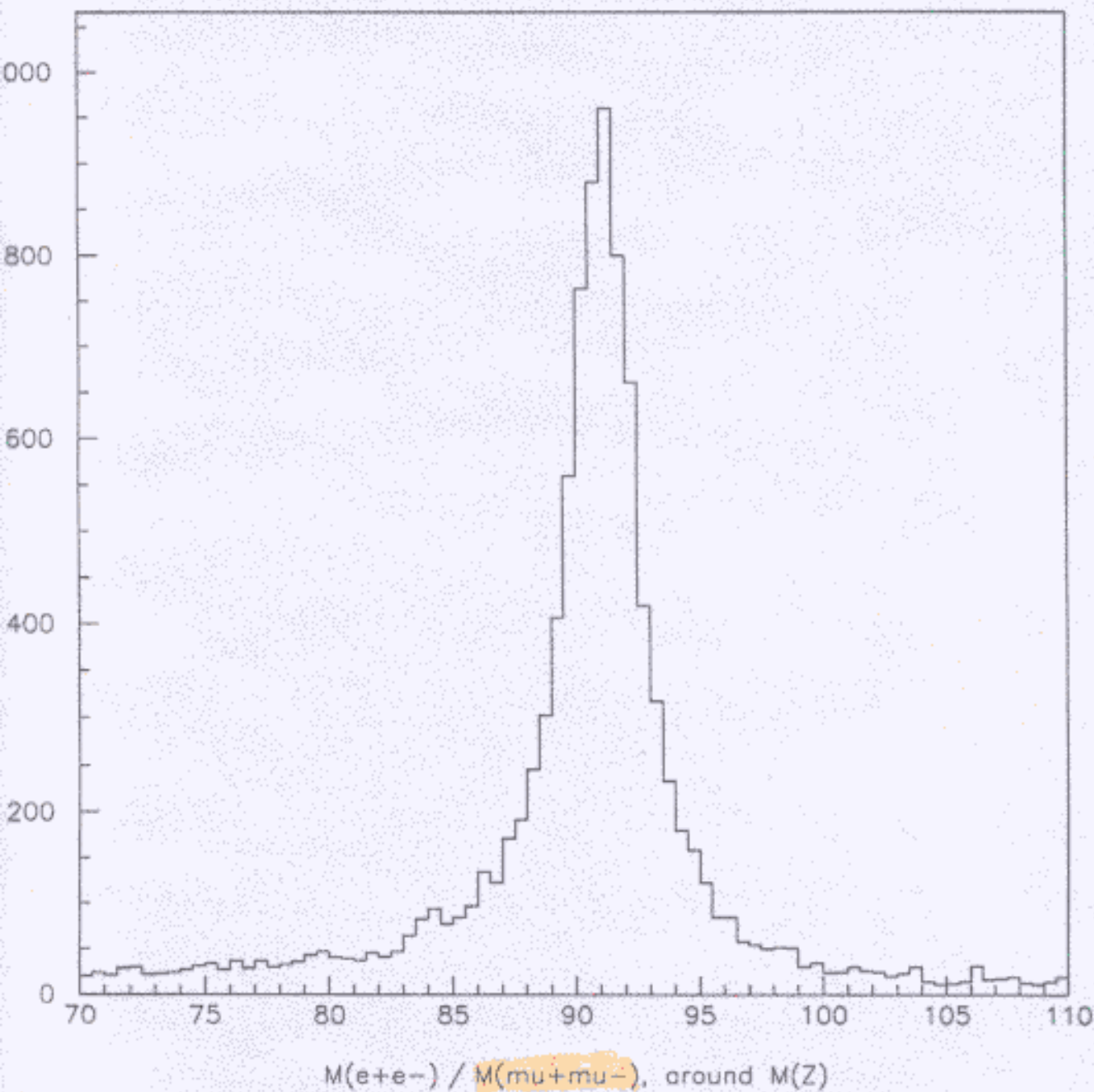


Fig. BW + 2. order polyn.

$$\Rightarrow \Gamma_Z \approx 3.0 \text{ GeV}$$

● Covariance Matrix, CCD

- parametrization reasonable ?

under study

(Klaus H. + Marco B.)

● Particle Identification, dE/dx

Michael H. provided code

problem:

reliability due to
double hits / track

pending

④ Sensitive Detectors within the Mask

- Low Angle Tagger (LAT)

- Fast Lumi Monitor (LCAL)

→ Fig.

LAT:

some (marginal) info's (Norbert T.)

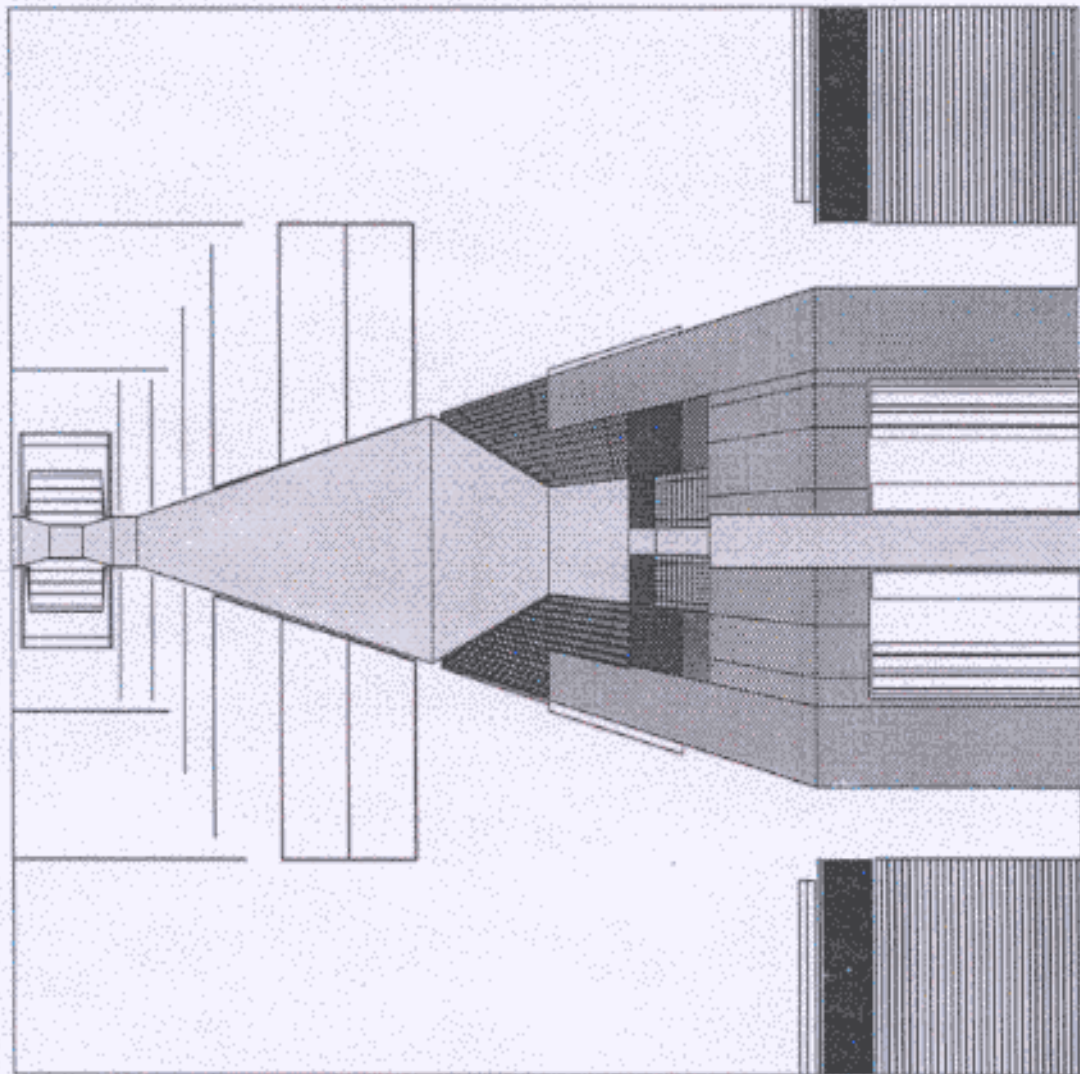
→ muons

→ (e^\pm/γ)

implemented SIMDET

But,

Modified Design of the Mask



- Mask moved 20 cm closer to IP

• LAT: 27.5 – 83.1 mrad

• LAT is shorter now (but $\geq 60 X_0$)

• LCAL: 4.6 – 27.5 mrad

} consequences ?
(e^+, e^-, γ); muons

↳ Bhabha electrons separated from background ?

- Final design of LAT and LCAL has to be found
- Performance of LAT and LCAL has to be quantified

Calorimeters (ECAL/HCAL)

- (A) - shower shape in ECAL/HCAL
 - Martin P. needs running BRAHMS
- parametrization of shower shapes
- implementation into SIMDET
- cluster finder
 - output: essential part of best energy flow objects

M.P. restarts Sept/Oct. 2000

③ new ECAL (V-Si) / HCAL (pad size 1cm x 1cm)

Jean-Claude B. provided set of routines

→ responds for photons
hadrons (charged/neutral)
(muons)

from GEANT studies

→ implementation into SIMDET
under way;

problems should be fixed very soon

→ output combined with tracker

→ best energy flow objects

Both tasks in parallel → 2 options for users

→ end of Oct / beg. of Nov

● Beamstrahlung

If Pythia

→ Thorsten O. provides new version(s)
of CIRCE

● Event Display

in progress by Harald V.

→ end of October

● Further Tasks

of e.g. program structure
data cards
checks

} permanently

Release :

SIMDET v04

in November 2000