L3 Detector Status and Running Request
(Report to the LEPC)

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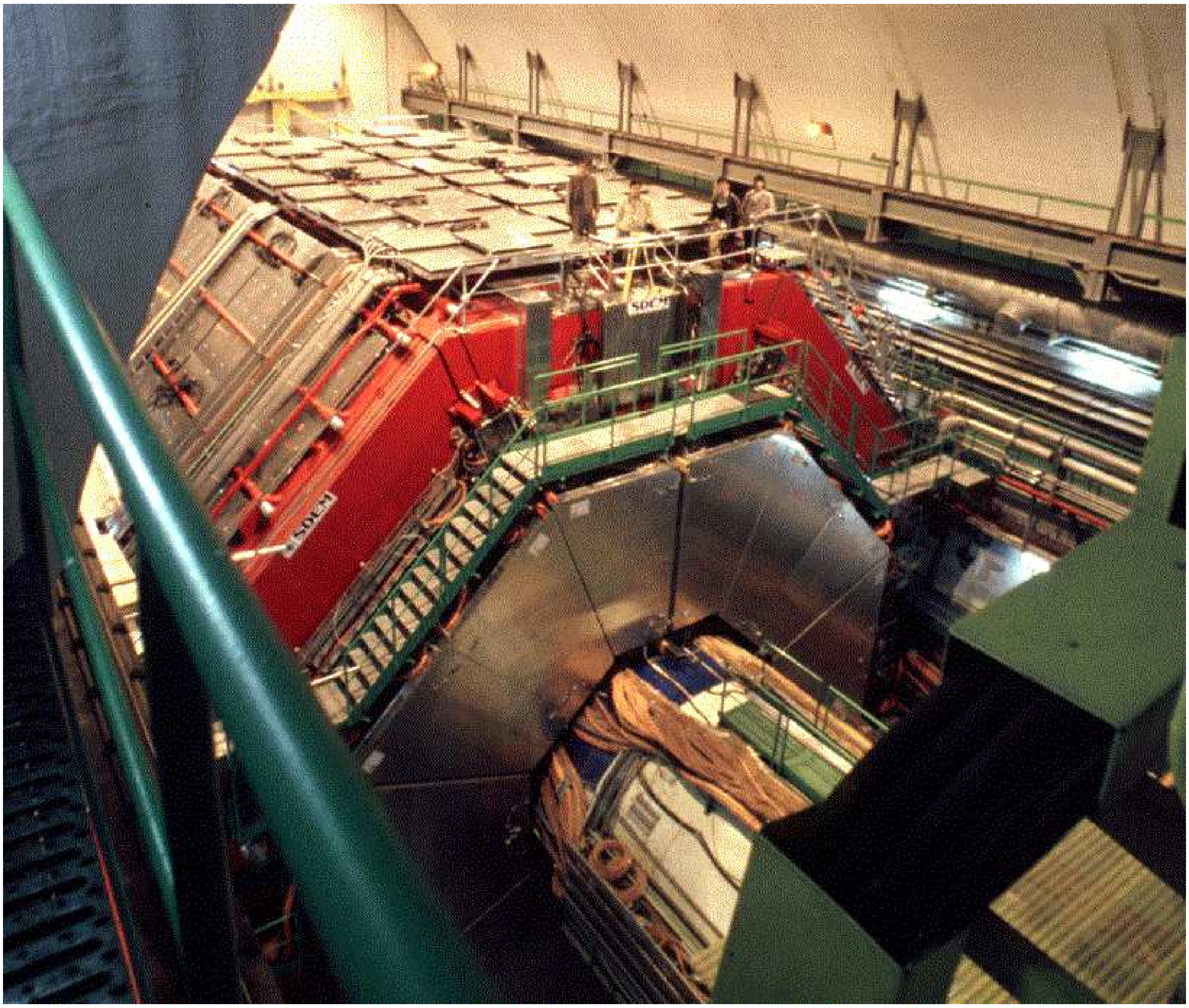
NIKHEF/L3

7 Sept 1999

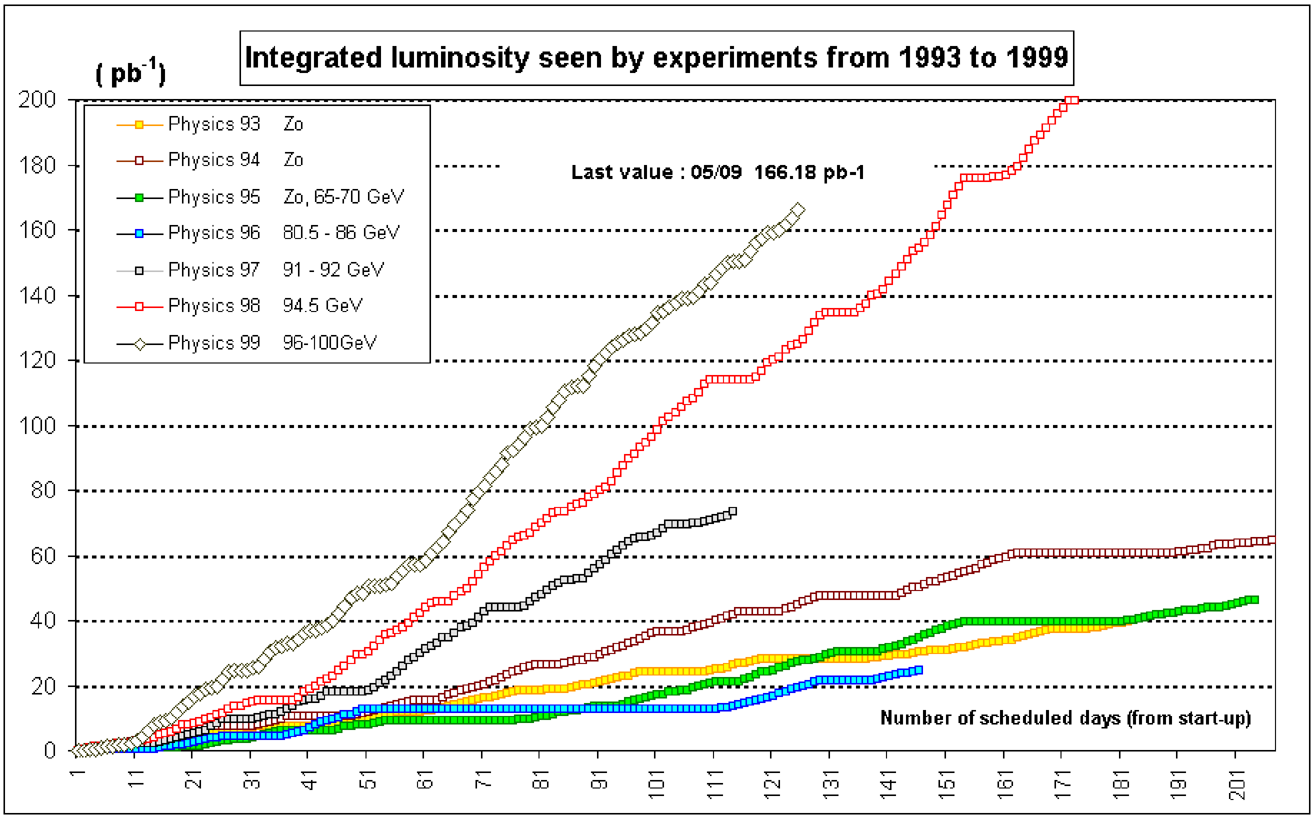
On behalf of the L3 collaboration

L3 Cosmics Installed



- L3 magnet covered with 200 m^2 of scintillator
- Independent TDC and DAQ system

LEP is better than ever

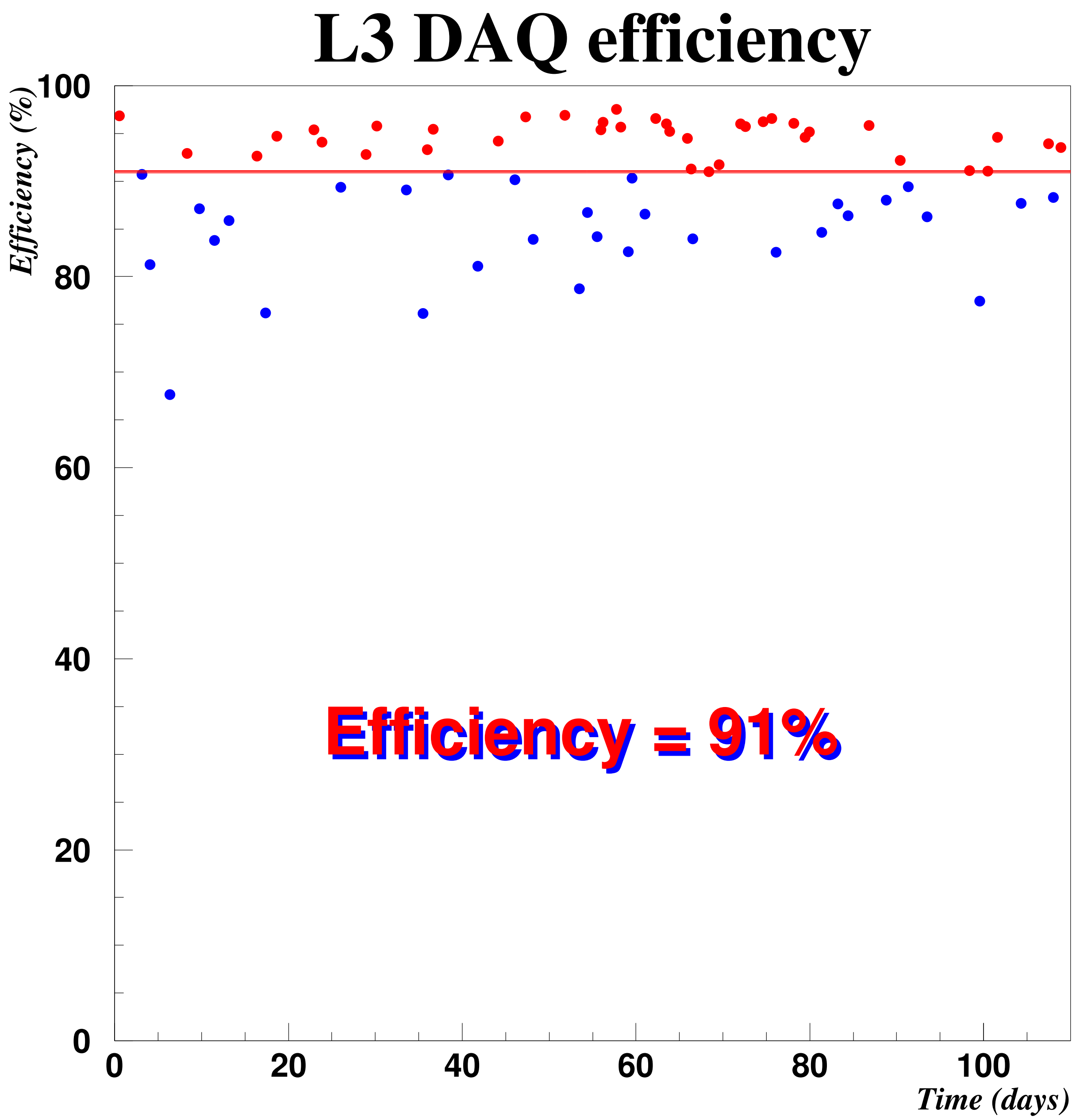


Thanks! (Champagne has been brought to the LEP control room)

Good choice of energies ($\sqrt{s}$=192 GeV, $\sqrt{s}$=196 GeV, $\sqrt{s}$=200 GeV)

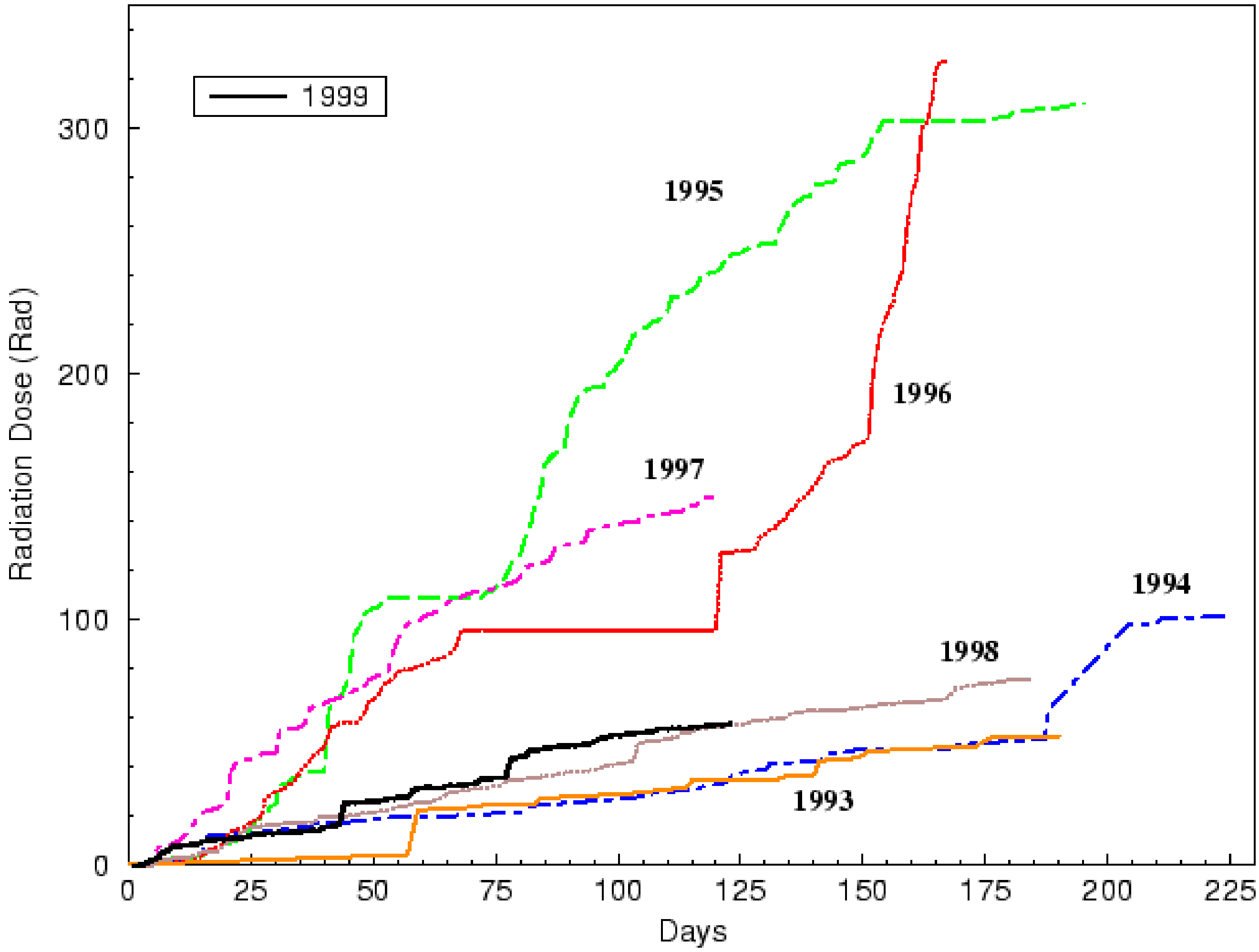
L3 collected 153 pb^{-1} (6 Sept 1999) at high energy with 91% DAQ efficiency

$\sqrt{s}$ (GeV)	Int. Luminosity (pb^{-1})	DAQ eff (%)
91	3.0	97
192	29.2	90
196	81.5	92
200	43.0	90



The DAQ efficiency increased from 89% in 1998 to 91% in 1999

Radiation to the SMD

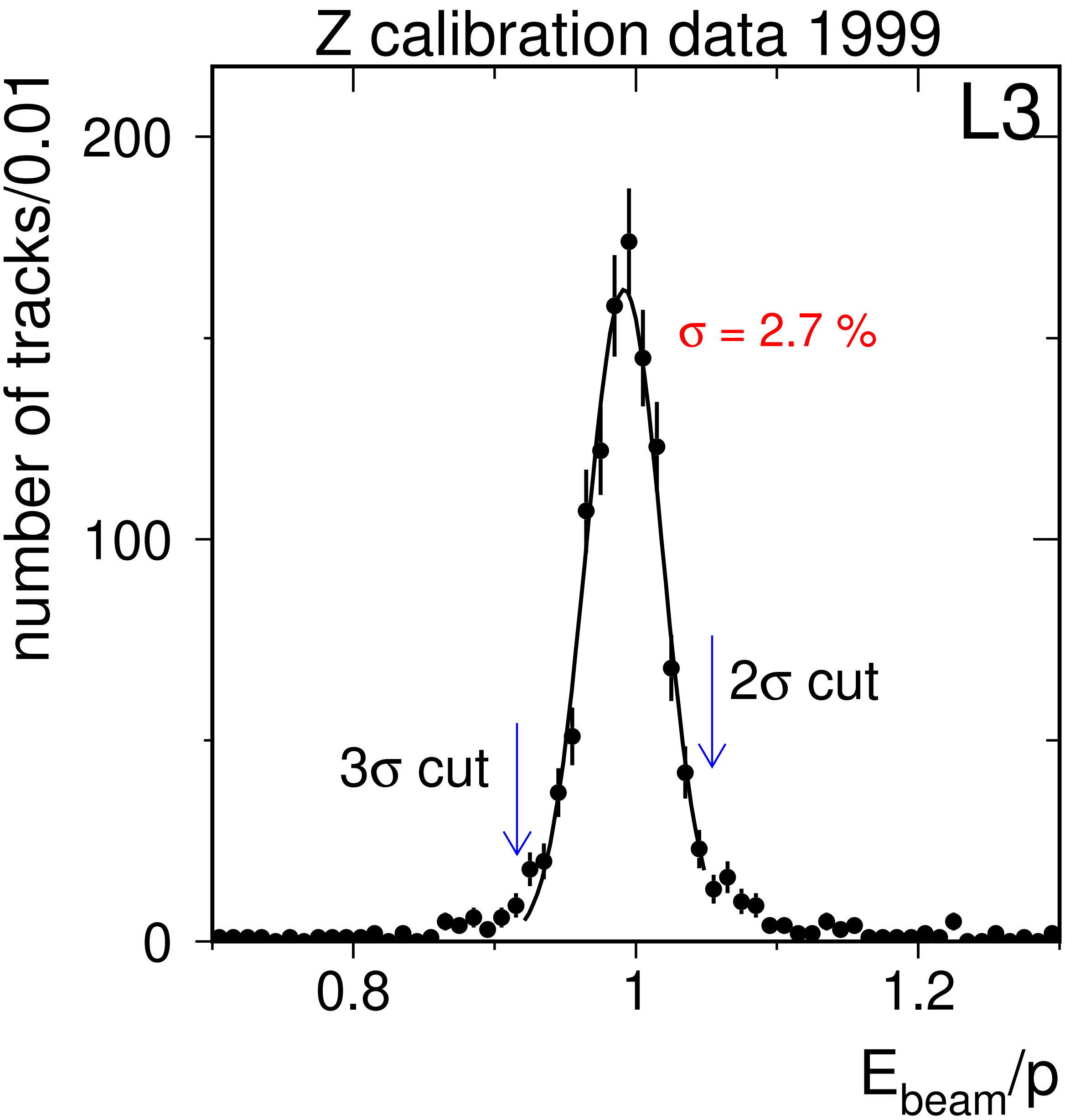


Low radiation dose to SMD and low backgrounds in the TEC during running BUT:

- Beam losses damaged TEC significantly.
- Sometimes high background in the Forward-Backward muon chambers at the beginning of the fill. Required the implementation of a less redundant trigger.

Muon Chambers

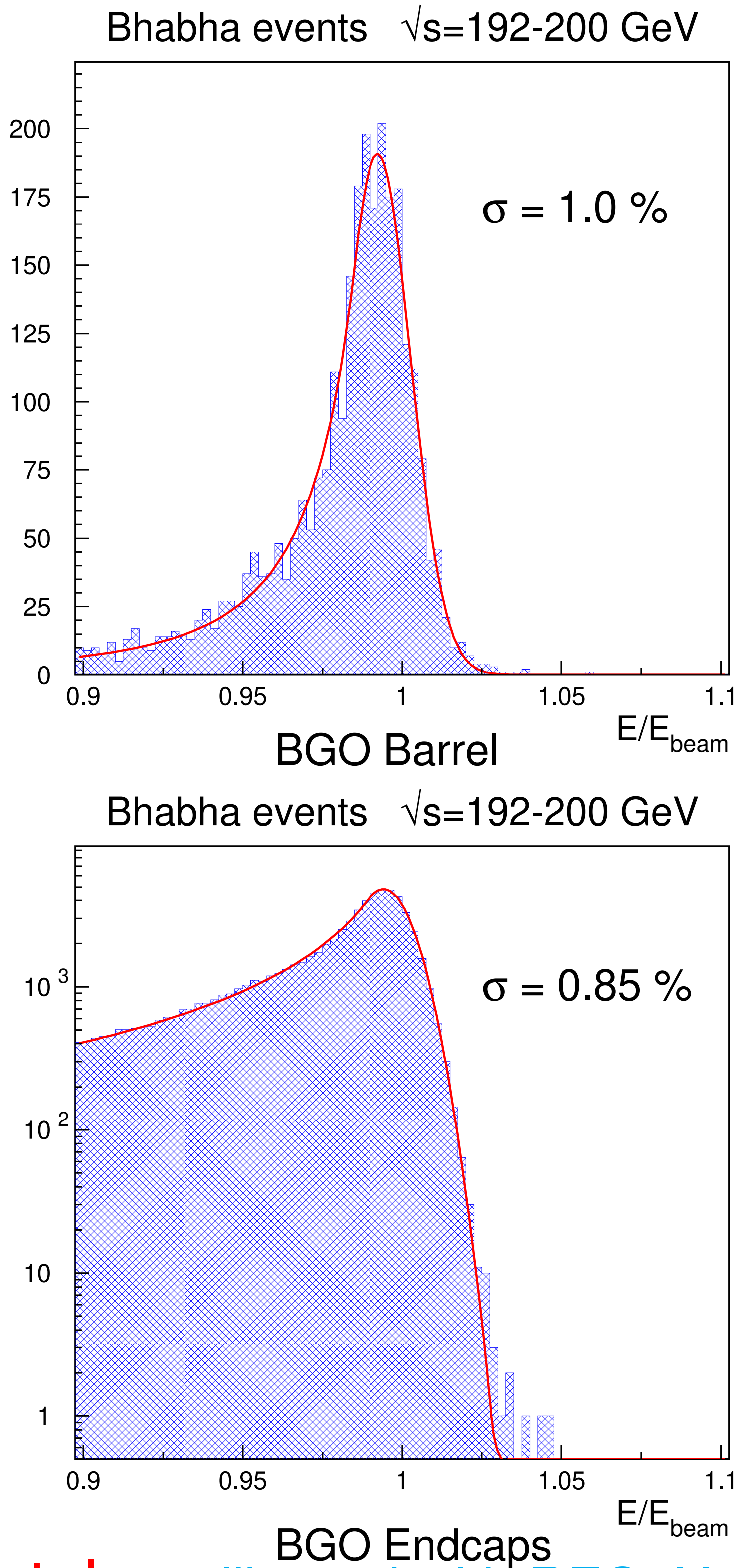
Performance of the muon spectrometer in 1999 on $Z \longrightarrow \mu^+\mu^-$ events :



Year	Resolution (%)
1996	2.8
1997	3.2
1998	2.8
1999	2.7

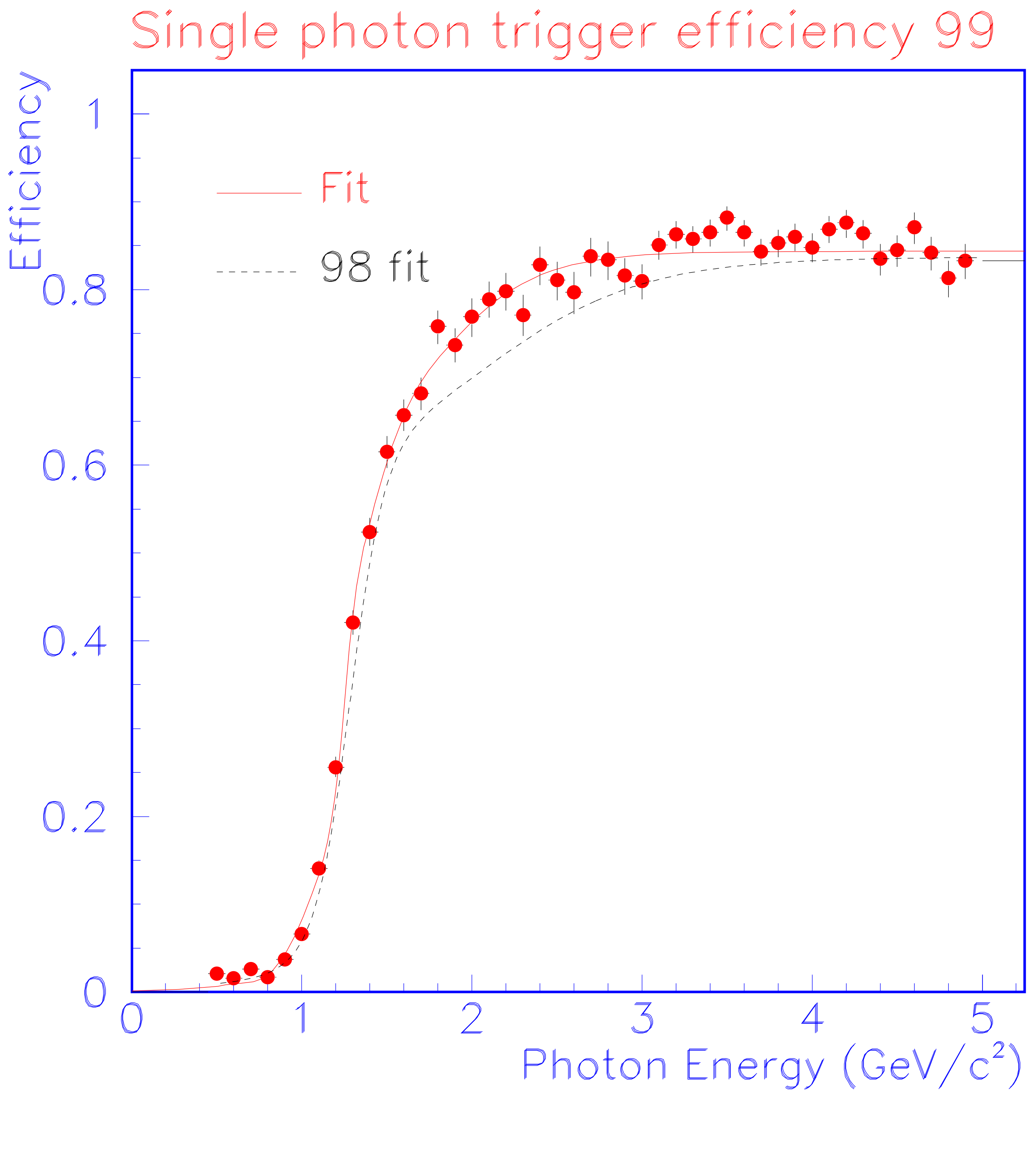
BGO Performance

Performance of the BGO detector in 1999 (Bhabha events):



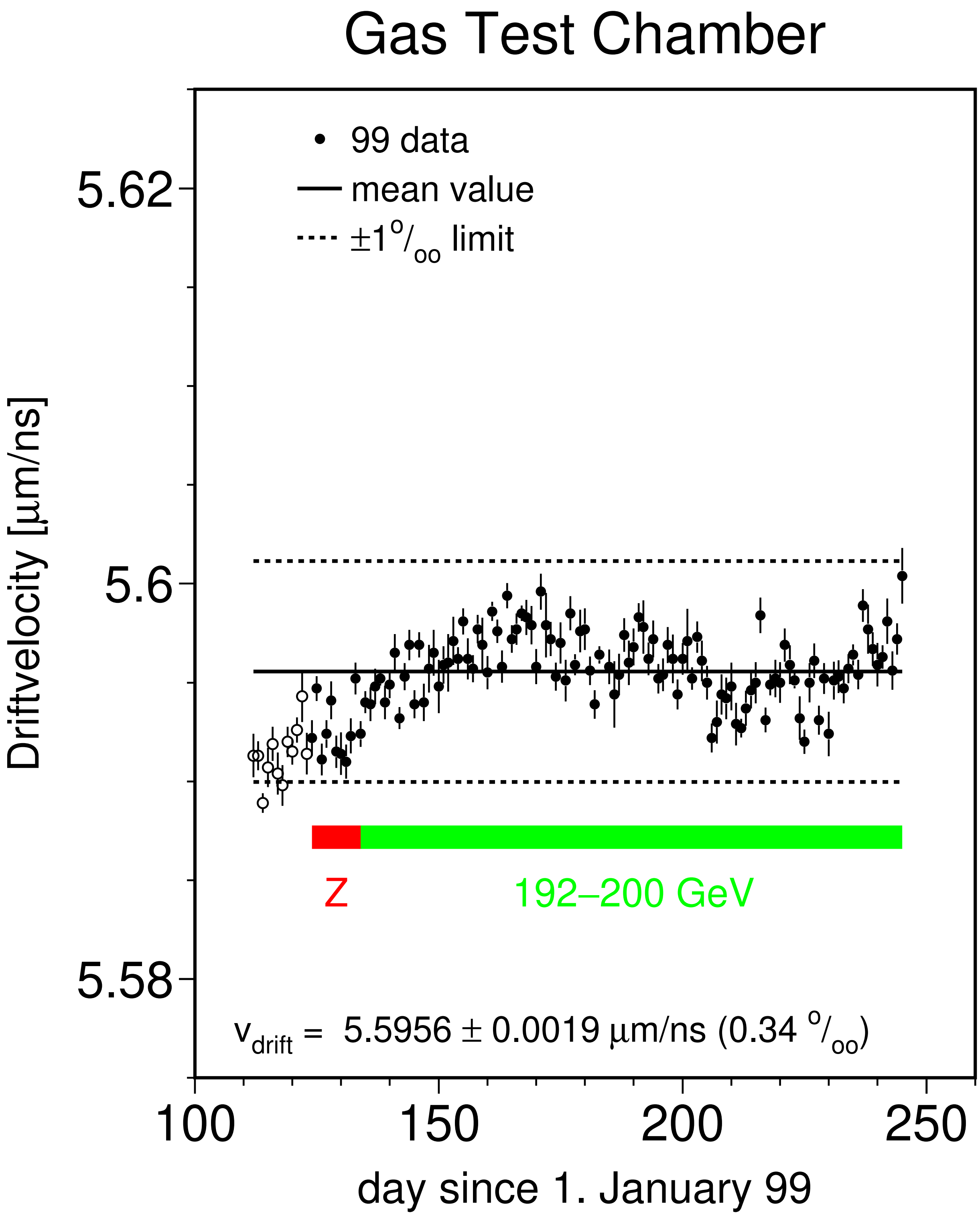
10780 crystals, calibrated with RFQ, Xenon flasher, and Bhabha events

Single Photon Trigger



Similar performance compared to
$\sqrt{s} = 91$ GeV running

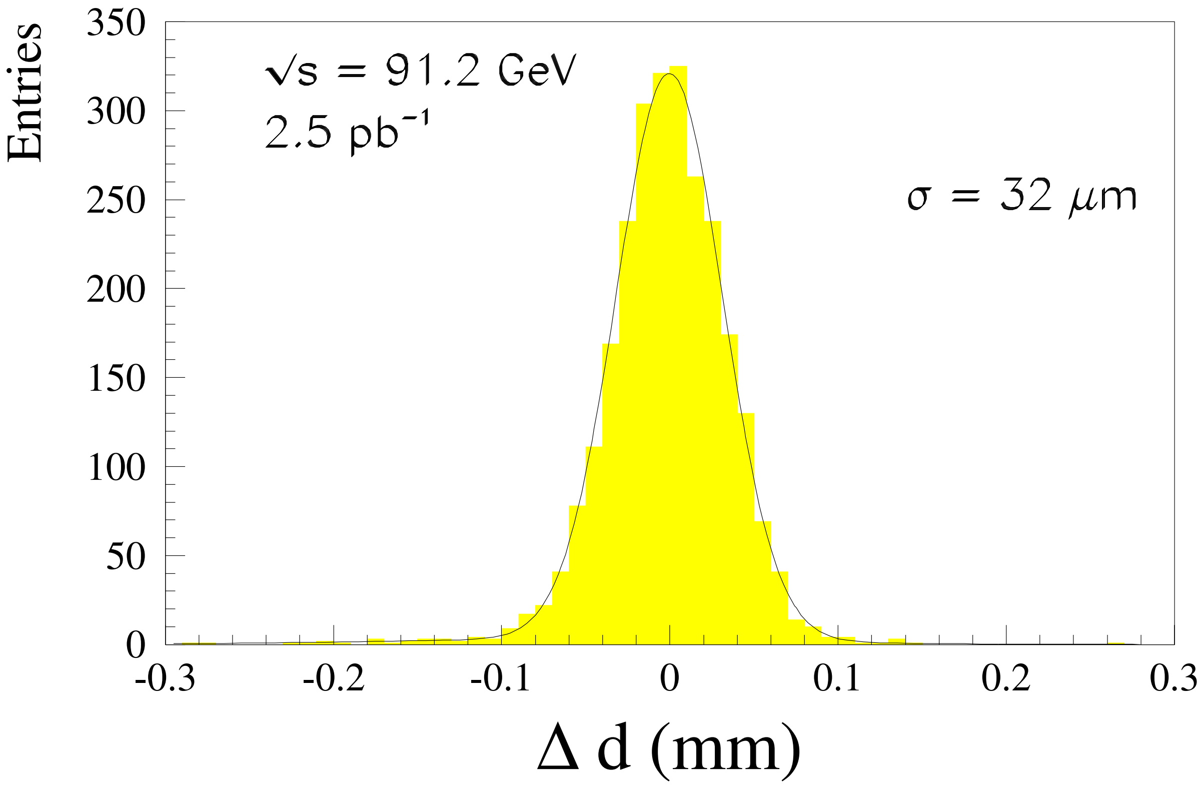
Stability of TEC Drift Velocity



Drift velocity as monitored with the gas test chamber is stable within the required tolerance

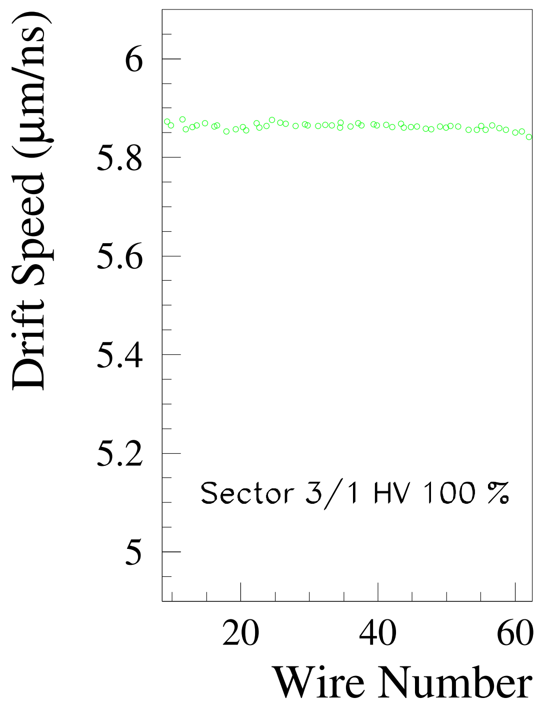
Central Tracker Performance

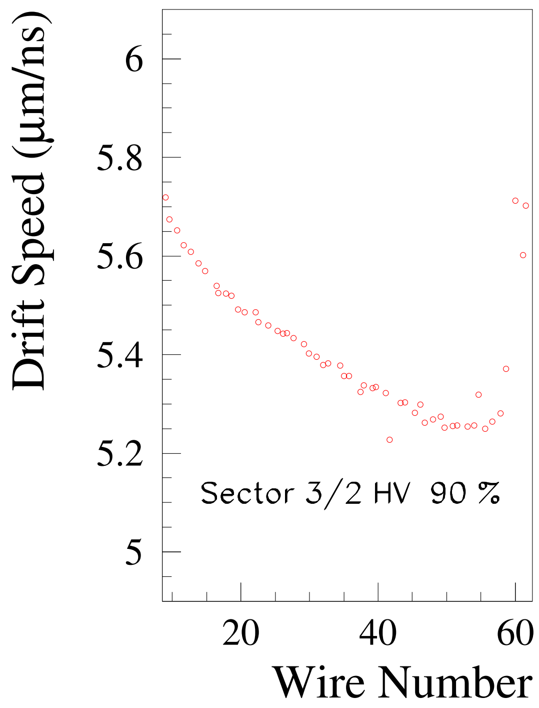
Performance of the central tracker (TEC/SMD) detector in 1999 on Bhabha and $\mu^+\mu^-$ events from the May 1999 Z calibration data:



TEC sectors 3,4

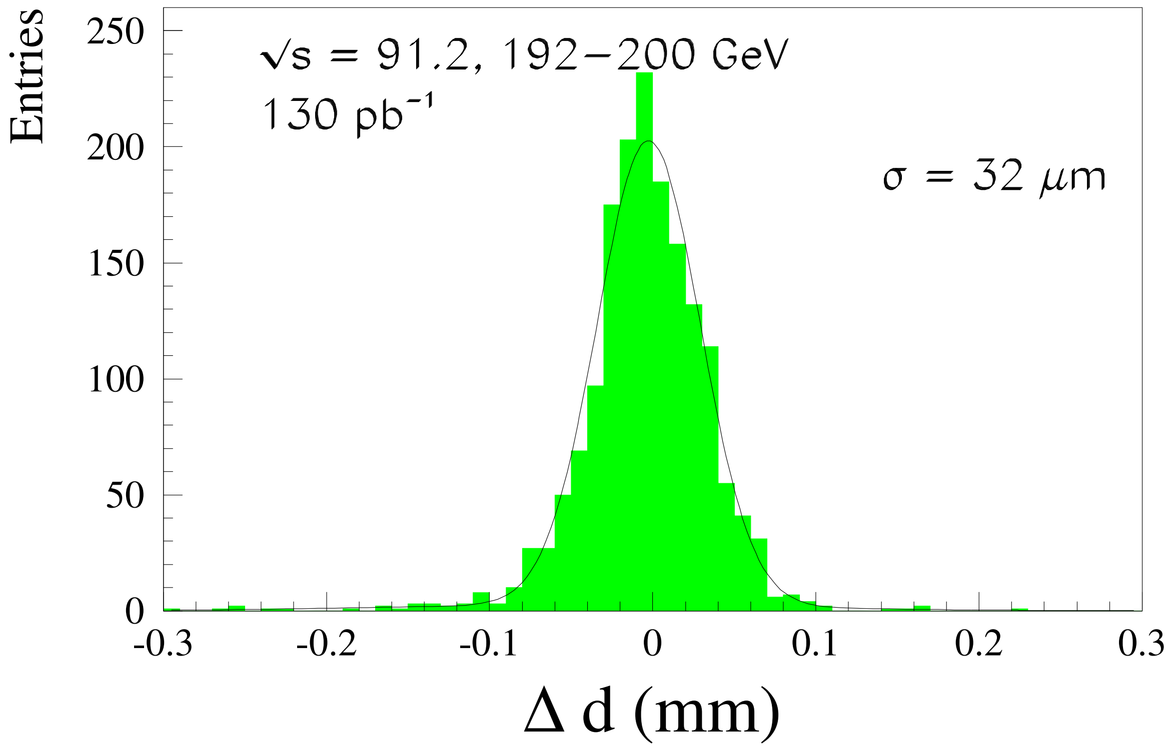
- On the 19/5/99, Beam loss in TEC induced an important damage to the TEC cathode frame between sectors 3 and 4.
- Problem is in the resistor chain on the chamber. No access possible to the chamber for the rest of LEP.
- The high voltage can only be set to 90% of its nominal value. Half sectors 3 and 4 are then working but with an inhomogeneous electric field map.





- TEC half sectors 3 and 4 need detailed and iterative calibration to restore the resolution.
- Sectors 3 and 4 have not been used for the B-tag so far.
- To finalize the calibration of these sectors the september Z run is needed.

Central tracker resolution on the high energy and August Z run, excluding half sectors 3 and 4:

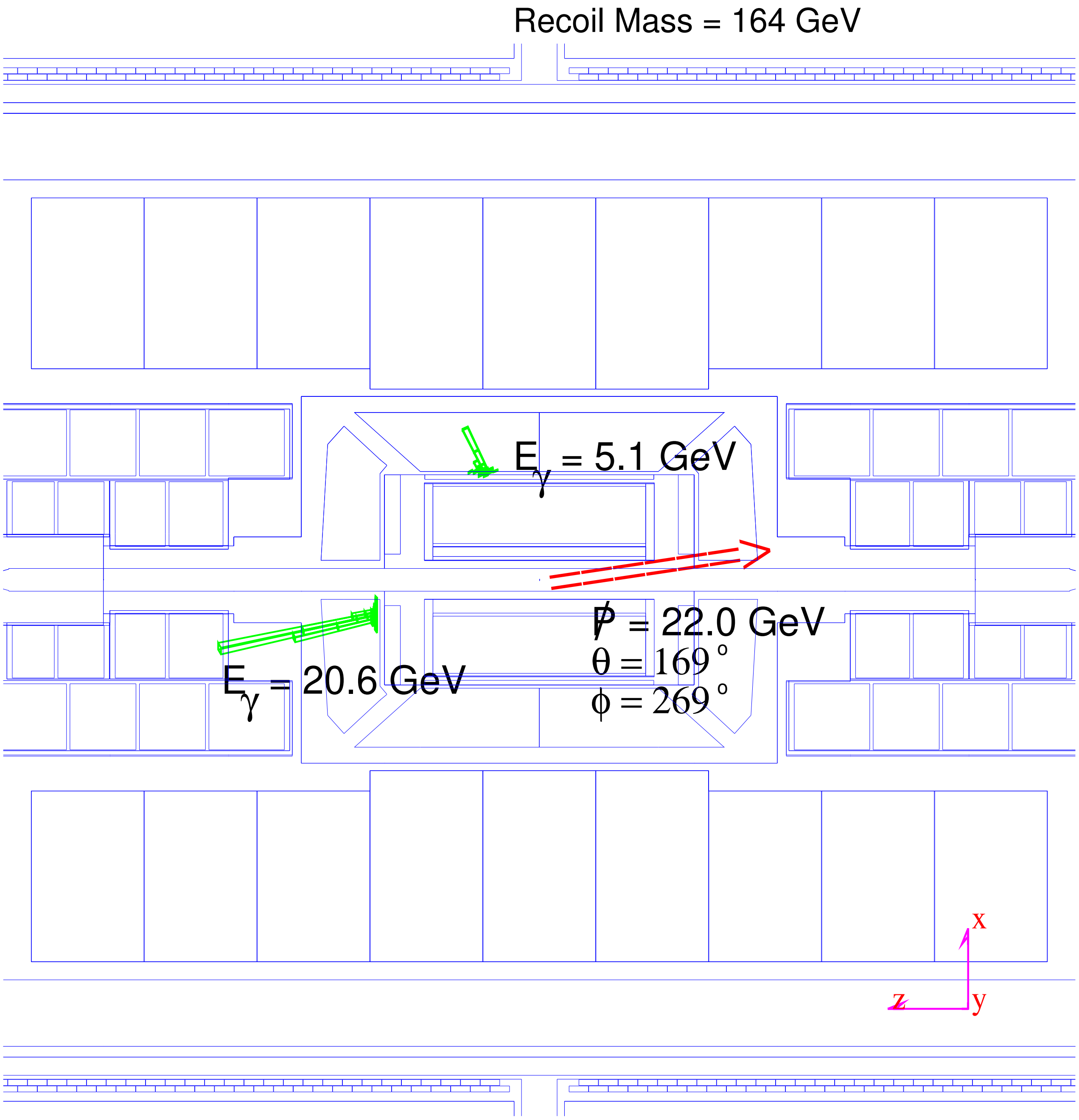


- Beam loss in TEC during acceleration on friday Sept 3: Cathode voltage between sector 20 and 21 is off. Access today to check how severe is the problem.
- We will report this afternoon to the LEPC.

We are very concerned about these catastrophic beam losses in TEC during acceleration (when the collimators are open)

$\gamma\gamma$ + missing energy event

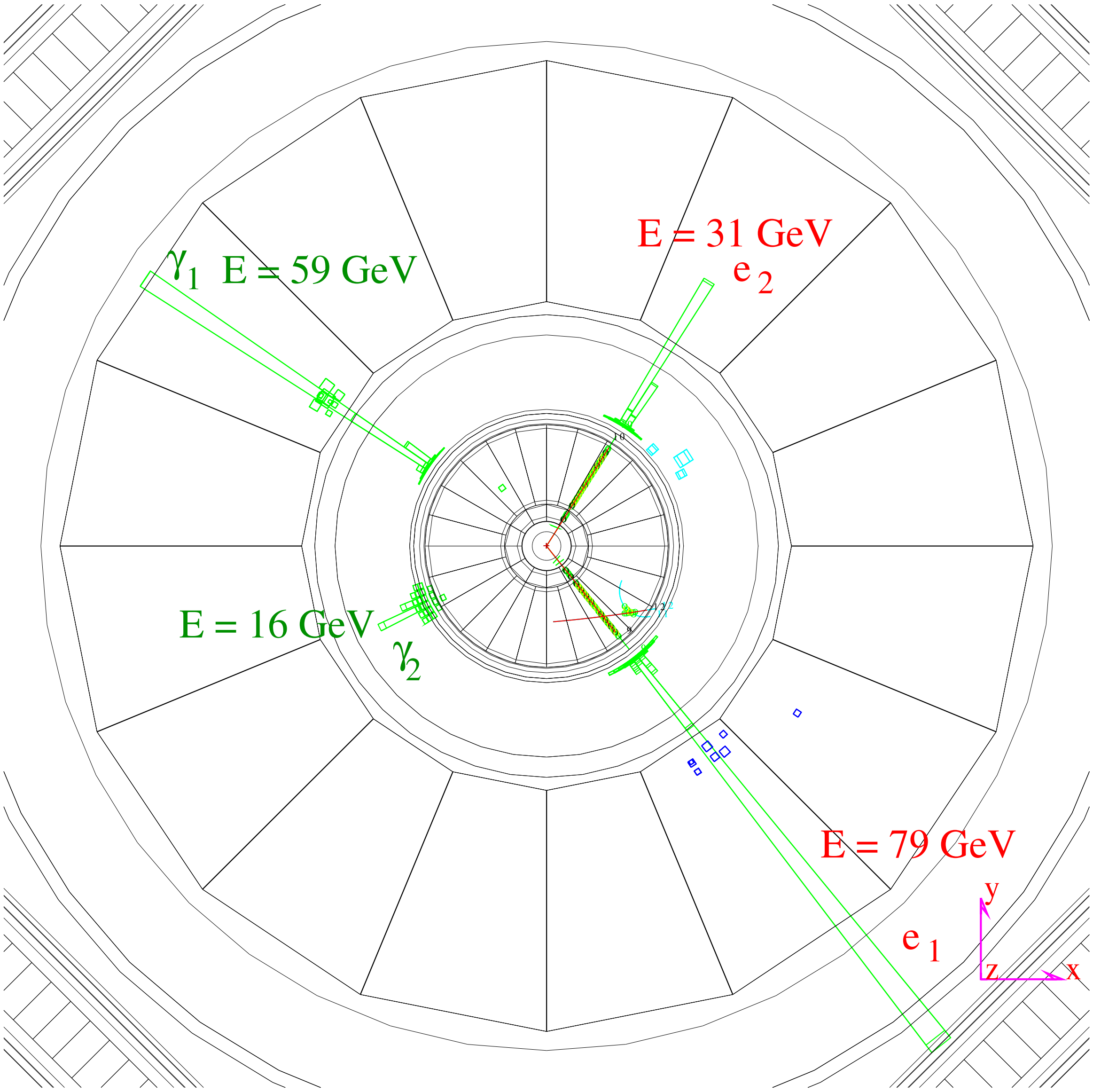
Run # 744201 Event # 4456



Excited Lepton Candidate

$m(e_1, \gamma_2) = 60$ GeV $m(e_2, \gamma_1) = 59$ GeV

Run # 772501 Event # 3103 Total Energy : 189.50 GeV

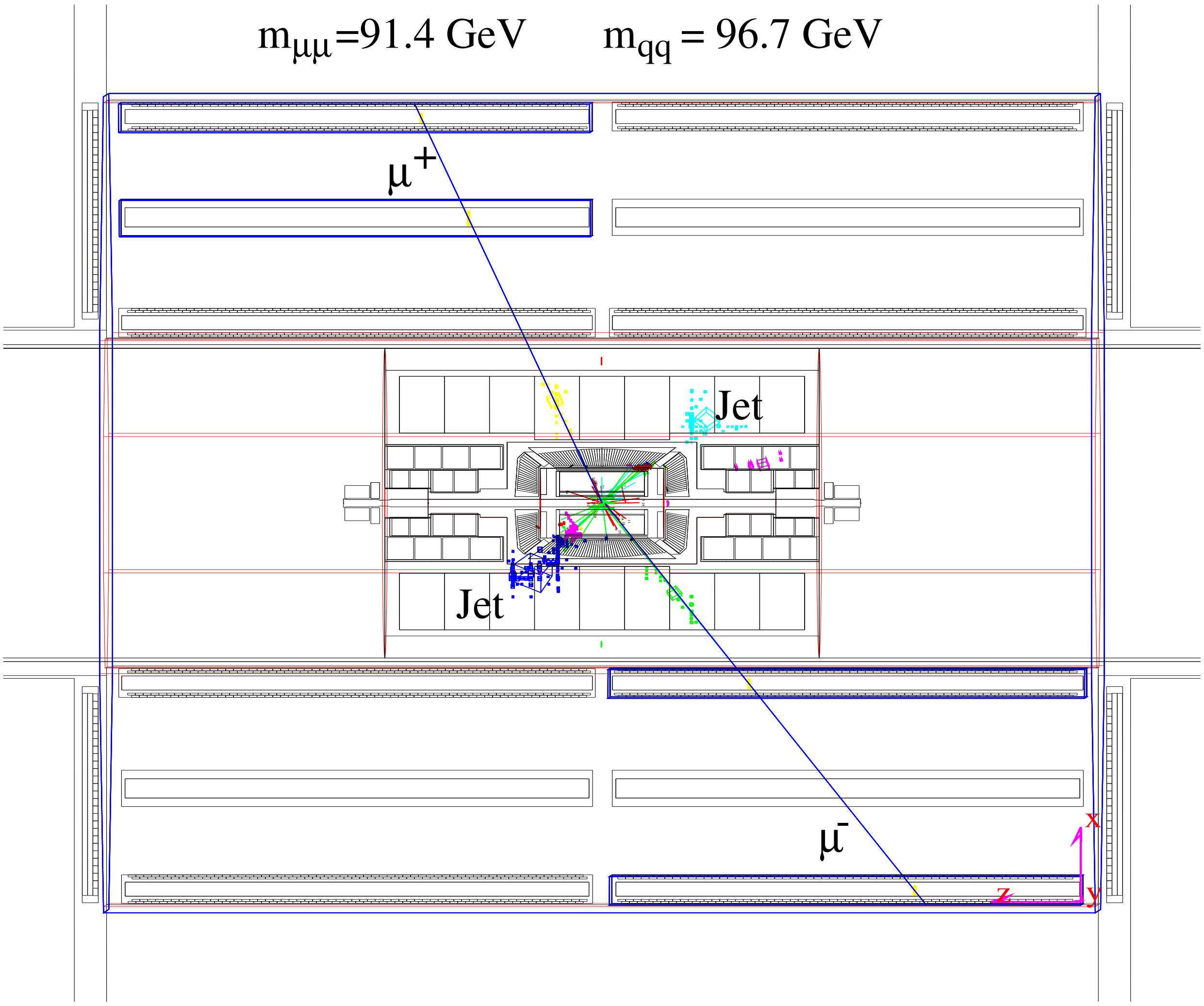


Transverse Imbalance :	.0166	**Longitudinal Imbalance :**	-.0202

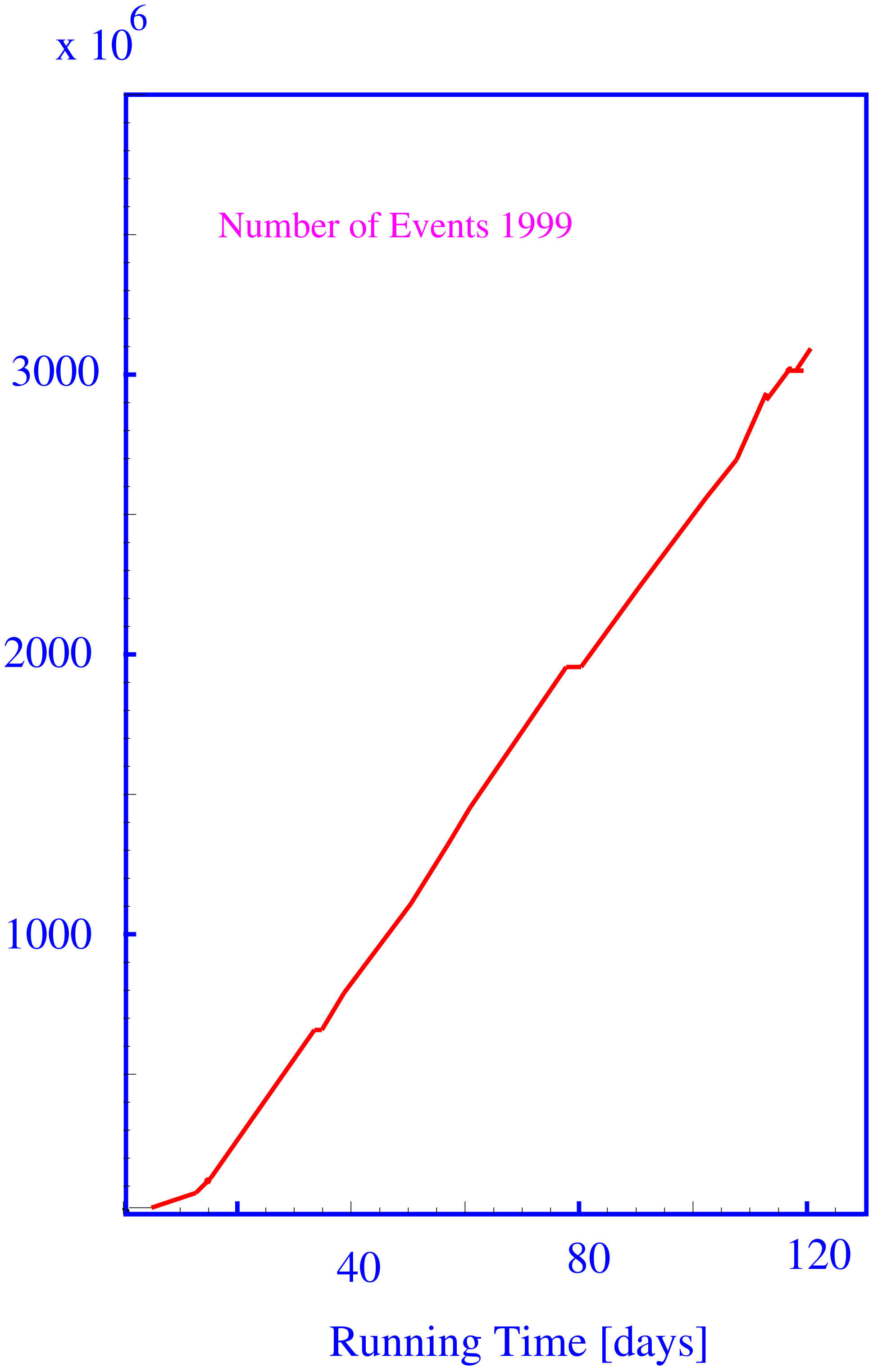
Thrust :	.7979	**Major :**	.2969	**Minor :**	.2251
Event DAQ Time :	*990820 54953*				

SM Higgs Candidate

Run # 754203 Event # 4501 Total Energy : 194.13 GeV



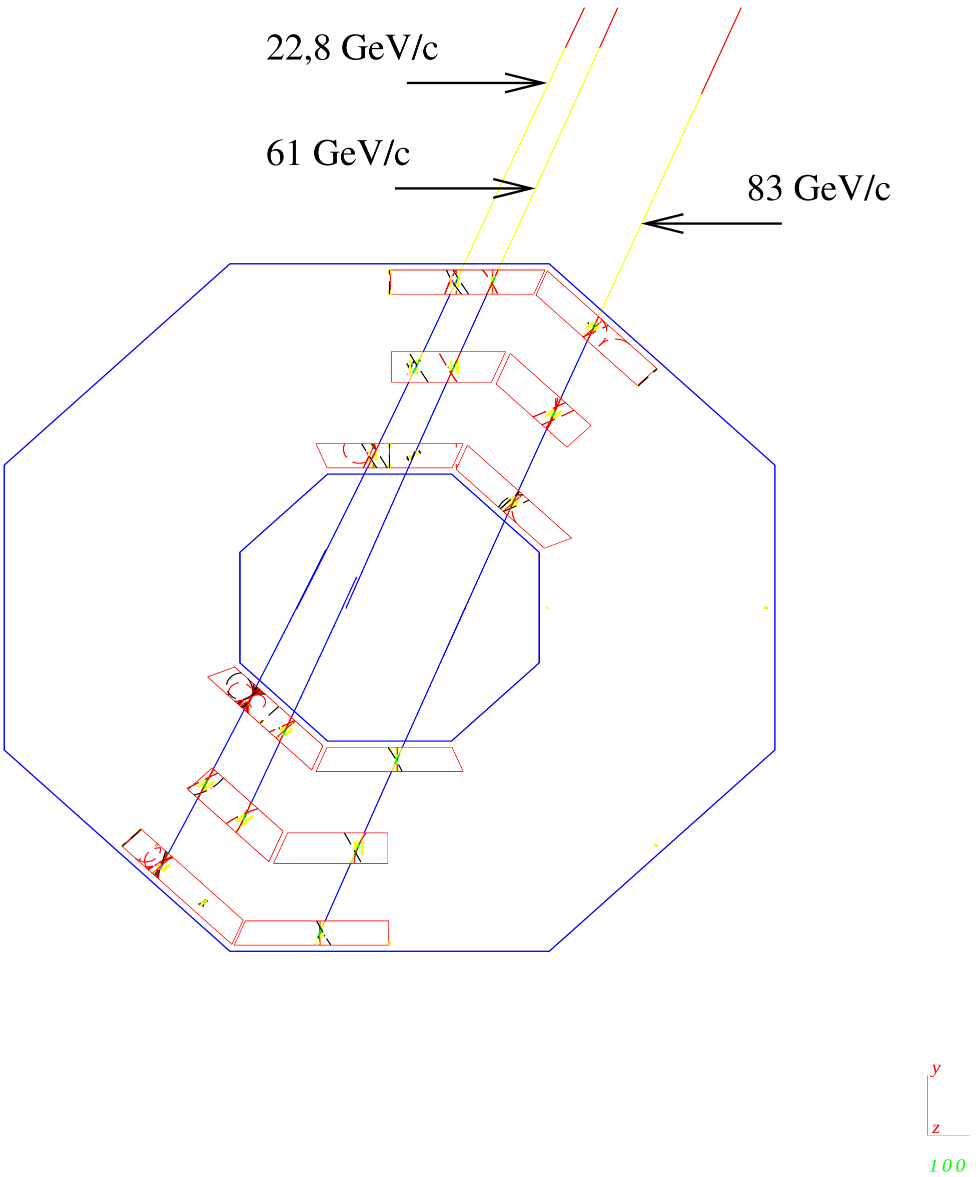
L3 Cosmics



3×10^9 events recorded by 30 August 1999

L3 Cosmics: 3 muon event

Run # 38314 Event # 66553 Data



Event DAQ Time :	*990729 215236*	

During 1997/1998 SHIFT3, the L3 analysis computer and L3 data repository was upgraded and maintenance was paid up to the end of february 2003. (No datataking was foreseen at that time in 2000)

Discussed on May 31 with IT division leader M.Delfino.

In FOCUS meeting 1-7-1999 it was proposed:
Decommissioning during middle of 2001: i.e. 1.5 years earlier than foreseen in 1997/1998.

$\boxed{\text{L3 needs SHIFT3 until end 2003.}}$

CERN Support for L3 in 2001-2003

To complete LEP data analysis we need:

- Computing support: SHIFT3.
- Continued support for the CERN L3 experimental group (fellows, paid scientific. associates, staff,...)

LEP Running during Sept/Oct

- L3 strongly supports switching to $\sqrt{s} = \mathbf{202}$ GeV at the end of September.
- L3 strongly supports running in Weeks 43 and 44 (“LEP reserve”)
- Data at $\sqrt{s} = \mathbf{202}$ GeV will increase search sensitivities by 2 GeV.

Summary

- L3 has collected 153 pb^{-1} so far in 1999 at high energy.
- During running background conditions are good, but the TEC has suffered serious damage from catastrophic RF-induced beam losses during acceleration.
- The Shift3 computer is needed until end of 2003.
- The September Z run is needed to calibrate the damaged sectors of the TEC.
- The LEP reserve is needed to obtain data at $\sqrt{s} = 202$ GeV to increase search sensitivities by 2 GeV.
- High Energy is our first priority.