ZEUS Status

HERA Coordination Meeting

May 8, 2002

W. Zeuner

- Detector
- Background situation
- Plans for a shutdown 2002/2003

Detector

- Hardware is in good shape, all components are working.

- Improving the GO-magnet support solved problems
  with closing the calorimeter.
  Magnet movements went down from O(mm) to O(1/10 mm).
- GG magnet support will also be improved.

- The radiation dosage of the micro-vertex detector is a concern
  Up to now ~20 krad received.
  Spikes during injection contribute significantly.
  $\Rightarrow$ Maintaining a good injection efficiency is important.

Background

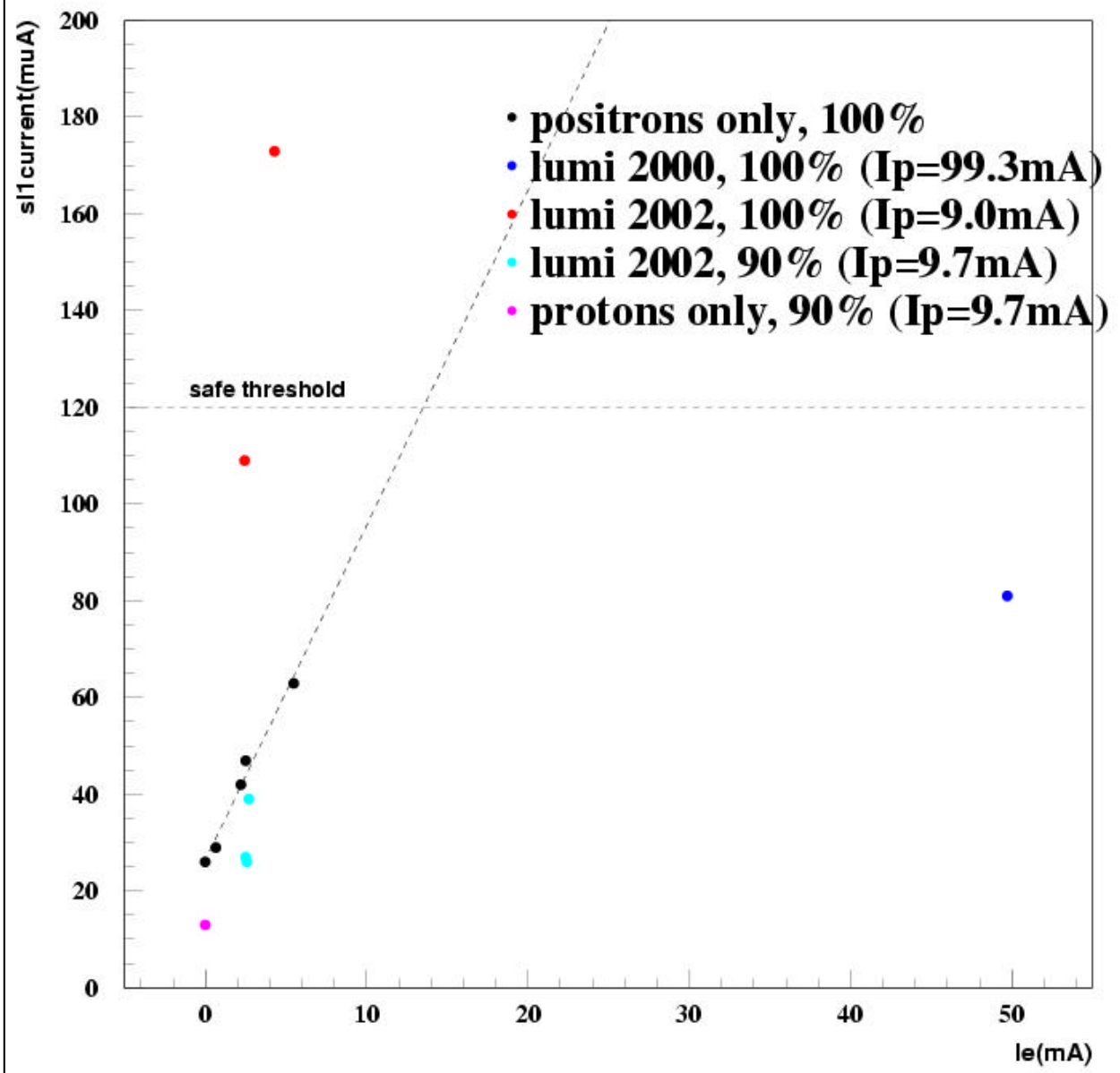
- Situation has greatly improved over the last weeks.
- Inner tracker has been ramped up to 100% HV a few times with $I_e \approx 3mA$ and $I_p \approx 9mA$, but up to now the conditions were stable and tolerable for a few minutes only.
- Forward- and rear tracker and muon chambers have also seen acceptable conditions.

However…

- Extrapolating the currents from the inner tracker limits the beam currents to about 10mA for both protons and positrons

- Large backgrounds from both beams

Positron Beam Current vs. Chamber Current



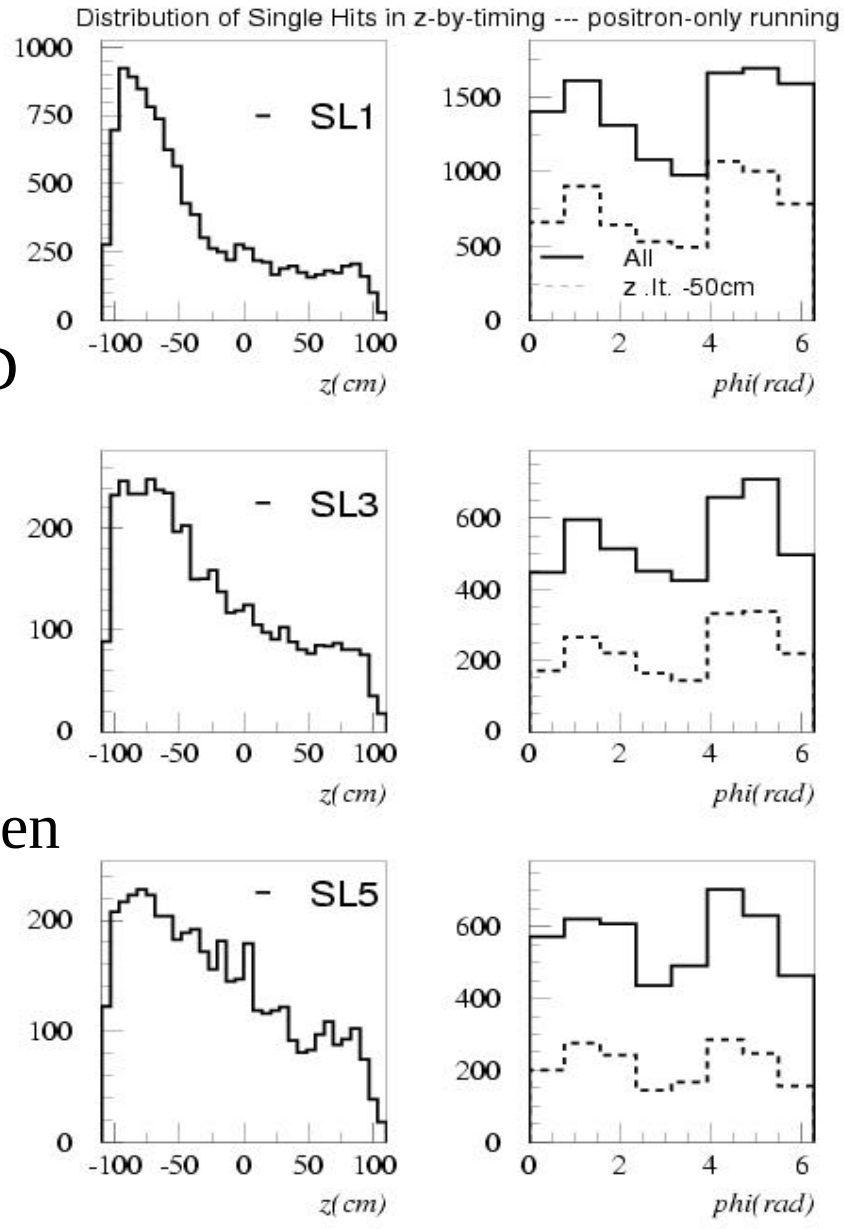
Background from e^+ beam

- Synchrotron radiation

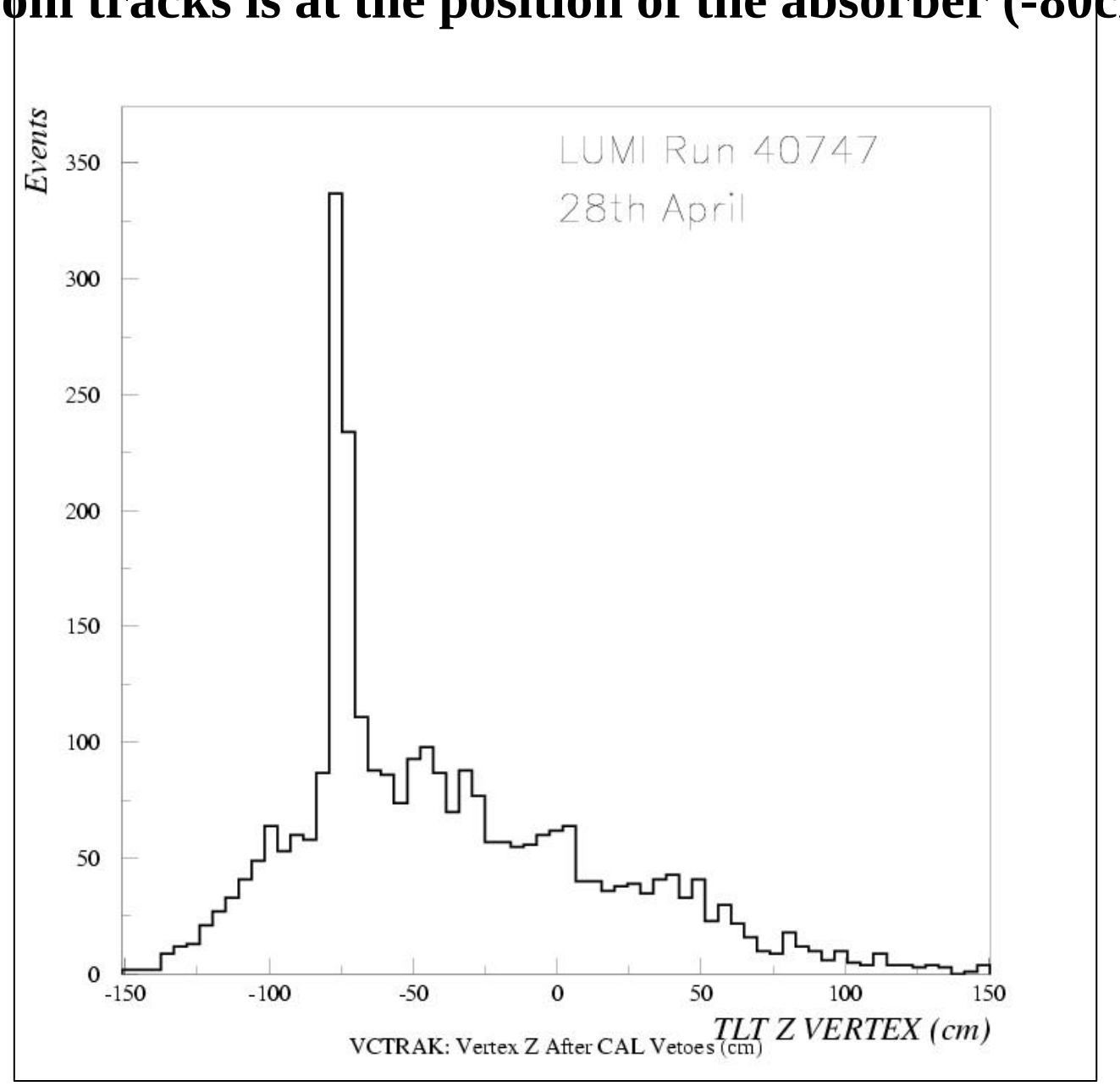
Hits absorber at –80cm
⇒ Peak in hit distribution in CTD
φ dependence

Probably from absorber at –11m

Time measurement difficult,
C5 counter is shielded with tungsten



Z-vertex from tracks is at the position of the absorber (-80cm)



Background from e^+ beam

• Off momentum positrons
Up stream beam gas reactions
Positron looses energy and is bent into RCAL

Typical e^+ energy 10-15 GeV
Rate sometimes very high O(100Hz)
Microvertex detector and CTD see large activity
Adds to background and causes problems for trigger

Events without off momentum positrons are much cleaner
$\Rightarrow$ Not a detector effect

Recently observed also large backgrounds from p-beam

- Trigger timing indicates beam halo hitting absorber
- Improvement of p-RF system might have cured the problem

- Need a proton only run to check
  If persistent, collimator studies and scraping exercises will be necessary

Plans for a Shutdown 2002/2003

Very Preliminary…up to now only one major item

- One undercarriage of the iron yoke needs to be replaced
  Time estimate: 4 weeks