

# HERA-B Shut-Down Report

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# 1) Detector upgrade

## **Beampipe:**

Replace present beampipe (0,5 mm Al) with new version with reduced wall thickness. Press folding increases stability by 1,6 - 3.

All segments available and pressure tested ( $> 1.8$  bar overpressure).  
Welding has started (30% done).  
Install begin June.



## **Vertex detector:**

- Replace / repair bad Si modules (10%)
- Complete set of new detectors with Helix 3.1a chips in production for 2002 run (bonding at Desy possible now)
- New RF shielding in preparation with smaller ribbons (12.7  $\rightarrow$  7 mm) to fully exploit acceptance (15  $\rightarrow$  10 mrad). Will not be installed now in order not to endanger Hera operation

## Inner tracking :

Comprehensive repair program for all chambers (new grounding scheme, replace bad detectors, cut anode shorts etc.)

- 10 (of 12) non-trigger stations finalized
- Repair of 8 trigger stations going on. Will use new Helix chip 3.1a. Expect to install 4 stations before end of shut-down. Rest will follow during access days

# Outer tracking :

Comprehensive repair program for all chambers including complete electronics chain

- HV problems

15% inactive cells due to badly soldered capacitors, lack of mechanical stability of some modules etc.

No access to outer half of detector before April due to tram operation, nevertheless hope for reassembly of all large chambers till end of shut-down.

Reassembly of magnet chambers started (2 of 8 ready). Will be finished during access days.

- Electronics problems

TTL connection between TDCs and TLBs (trigger link board) modified to reduce read-out noise (improve effic.)

Improve stability of optical trigger links by adding DACs.

Expect reduction of HV failure rate by >10 and increase of single layer effic. from 85% to > 93%.

# Muon system :

- Tube chambers

Repair gas leaks and all bad / noisy channels (7% of channels).

- Pad chambers

Same repair work as for tube chambers (15%).

Due to these problems, strong fluc's in chamber effic. observed. In addition, had low effic. (< 93%) due to mismatch in timing between preamp and read-out.

Various options tested to improve  
⇒ equip some chambers with L3 preamps for in-situ test of final solution.

# First level trigger :

- Hardware improvements
  - ✦ All OTR and Muon repairs
  - ✦ Upgrade of trigger links
  - ✦ Multiplicity veto against “hot” events
- Software improvements

⇒ expected performance:

$\mu^\pm$  -track efficiency 20% → ~54%

$e^\pm$  -track efficiency 54% → ~82%

Single FLT data of run 2000 reasonably well understood.

Rate of  $J/\Psi \rightarrow \mu^+\mu^-/h$ :

Trigger simulation= 52, measured= 37

Expect in 2002: 1500



## 2) Commissioning plans

Detailed plan in preparation:

1. Establish basic functionality (July - Sept)
2. First target commiss. (Sept) with few times 8 h of beam time; test VDS pot movements with beam
3. Occasional target operation (Oct - Nov)
4. Calibration and alignment needs routine target operation (Dec - Jan)
5. Muon eff. and pretrigger studies
6. Trigger commissioning

### 3) HERA related topics

- Please keep scheduled access days (13.8., 24.9., 22.+23.10., 4.12.)
- X-mas break for exchange of VDS modules (if necessary), needs venting of VDS vessel
- Please commission electron beam-dump (WL) and new proton collimator WR33 in collaboration with HERA-B