

HERA Status May 2005

HERA-Experiments Coordination Meeting May 3, 2005

- Accelerator performance April 2005
- Operations in May 2005
- BU Situation
- Shutdown Planning
- Open Accelerator Physics Issues

HERA Operations

Main p-background problems is solved for the time being (does not mean that background situation is completely relaxed).

Performance was very promising in early April and has taken a step back after the BU repair

There are no major operational or technical problems at this point.

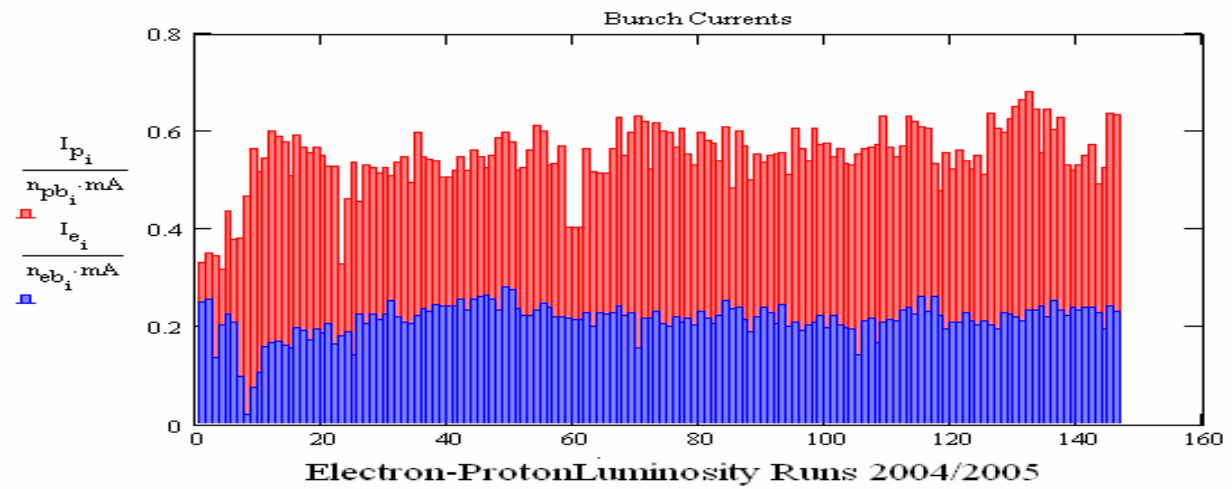
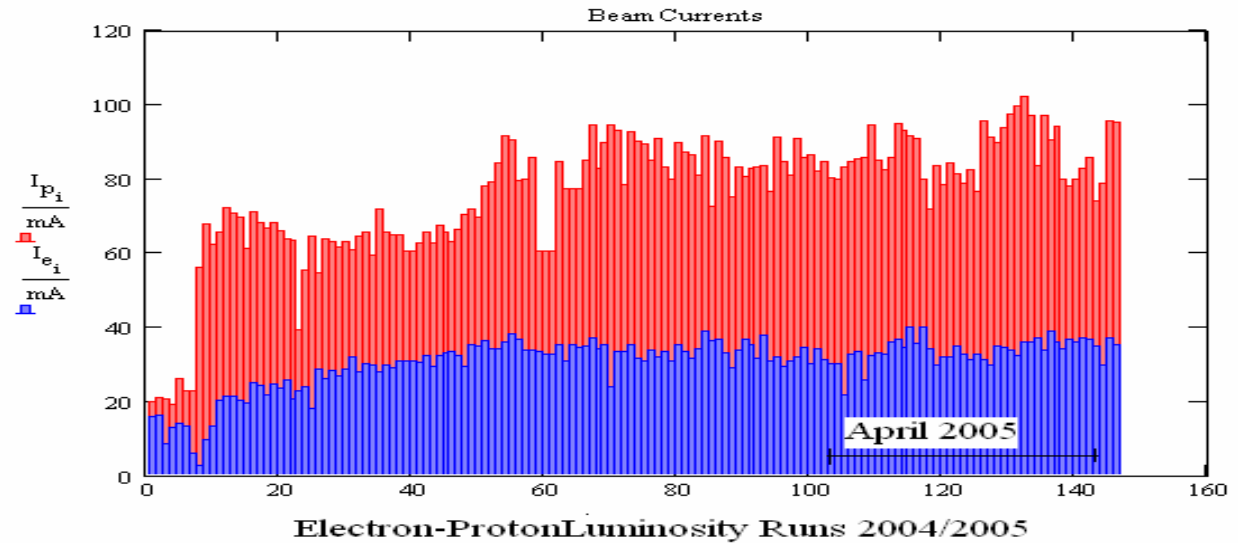
Beam Currents

➤ No Progress in the month of April

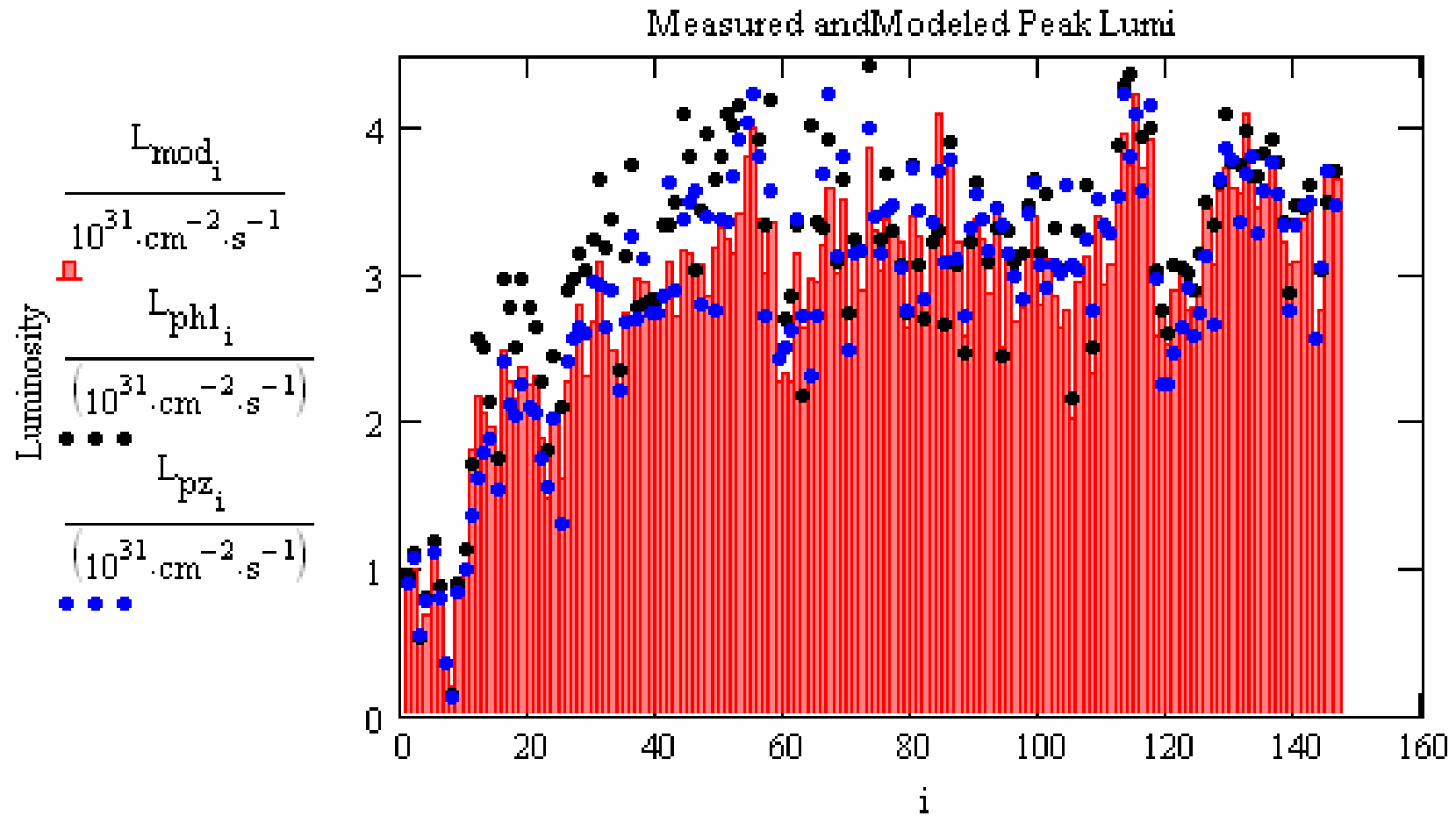
➤ After BU repair step back in electron intensity

➤ There are no technical limitations

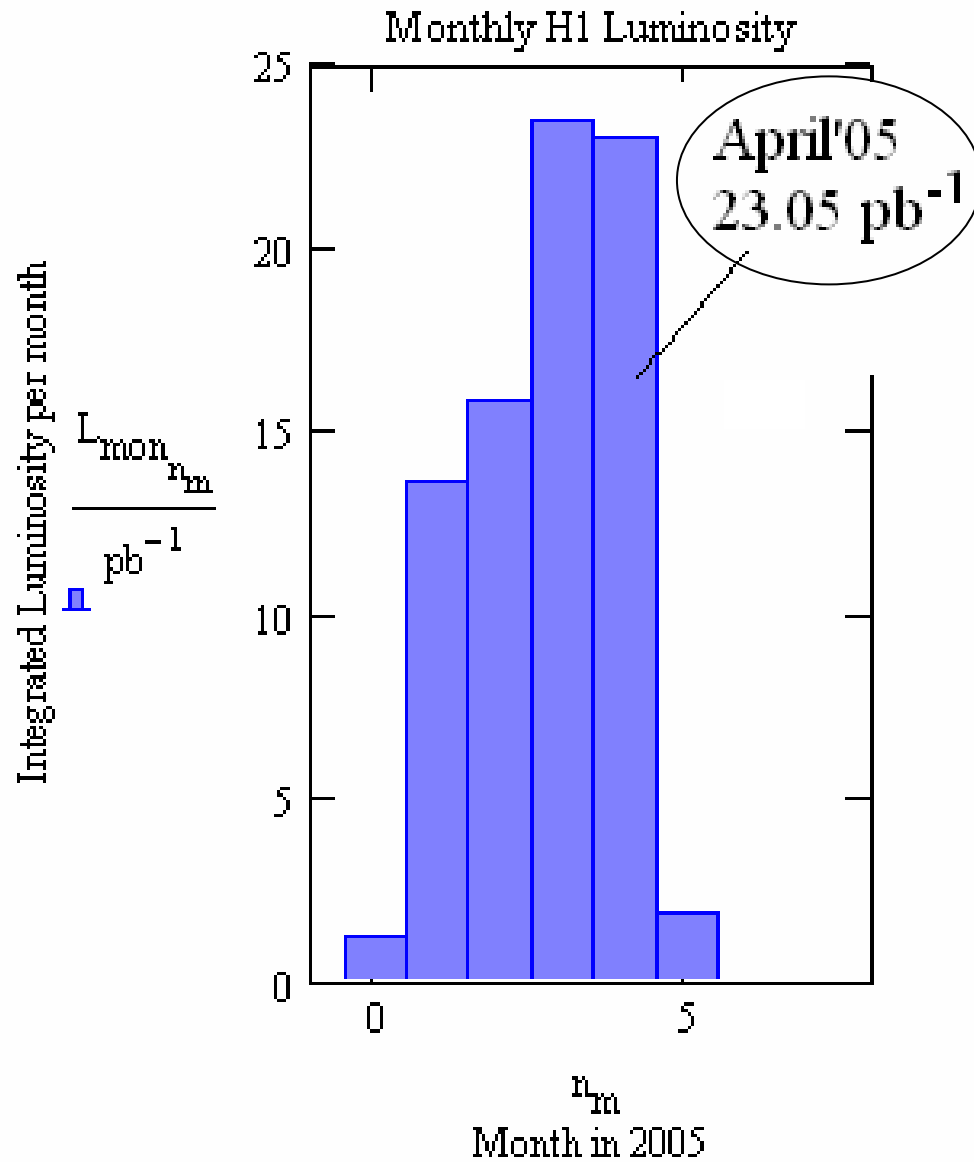
➤ To electron currents for the time being



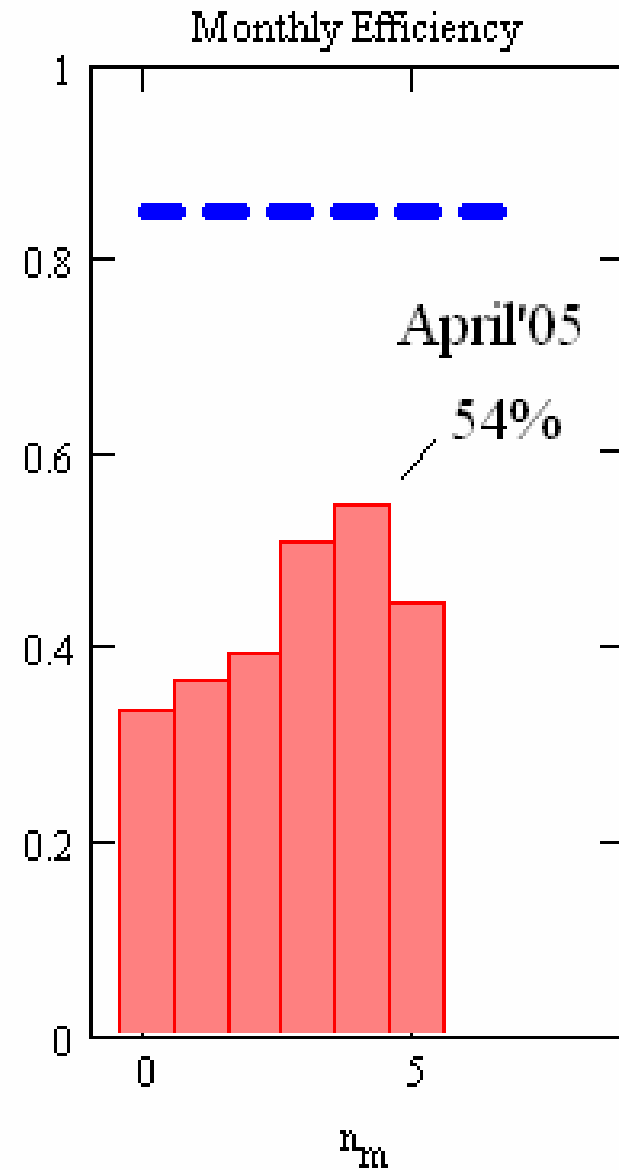
Record Luminosity Value $4.77 \cdot 10^{31} \text{ cm}^{-2}\text{s}^{-1}$



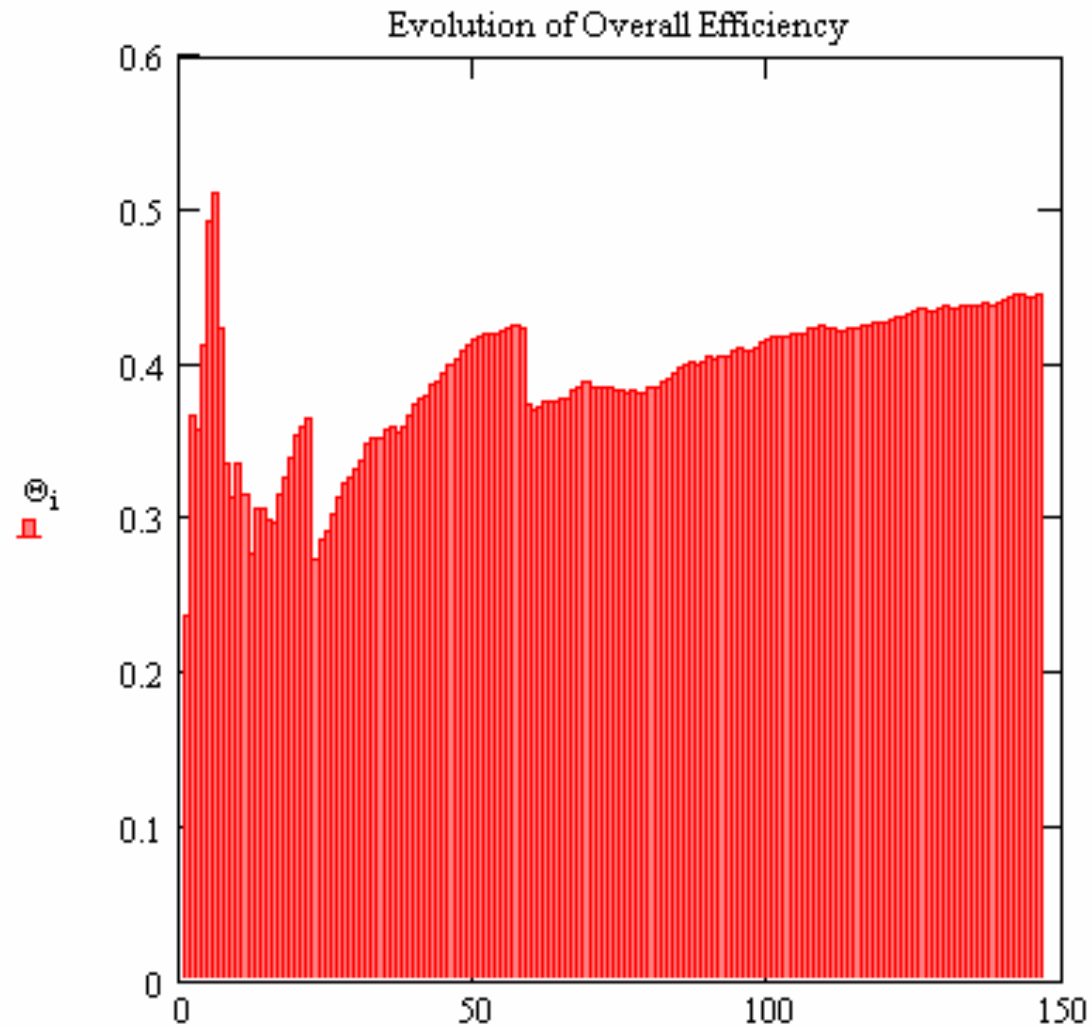
Despite one week of shutdown, integrated luminosity in April close to March value

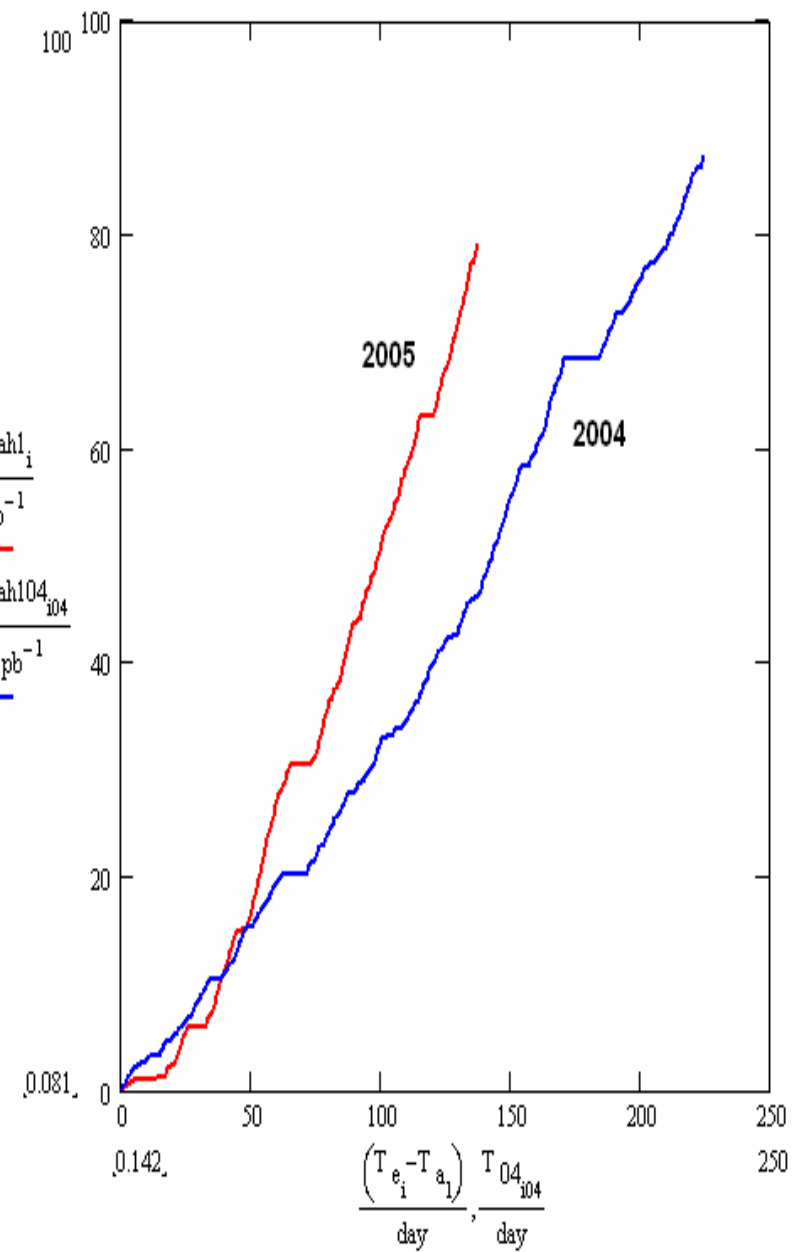
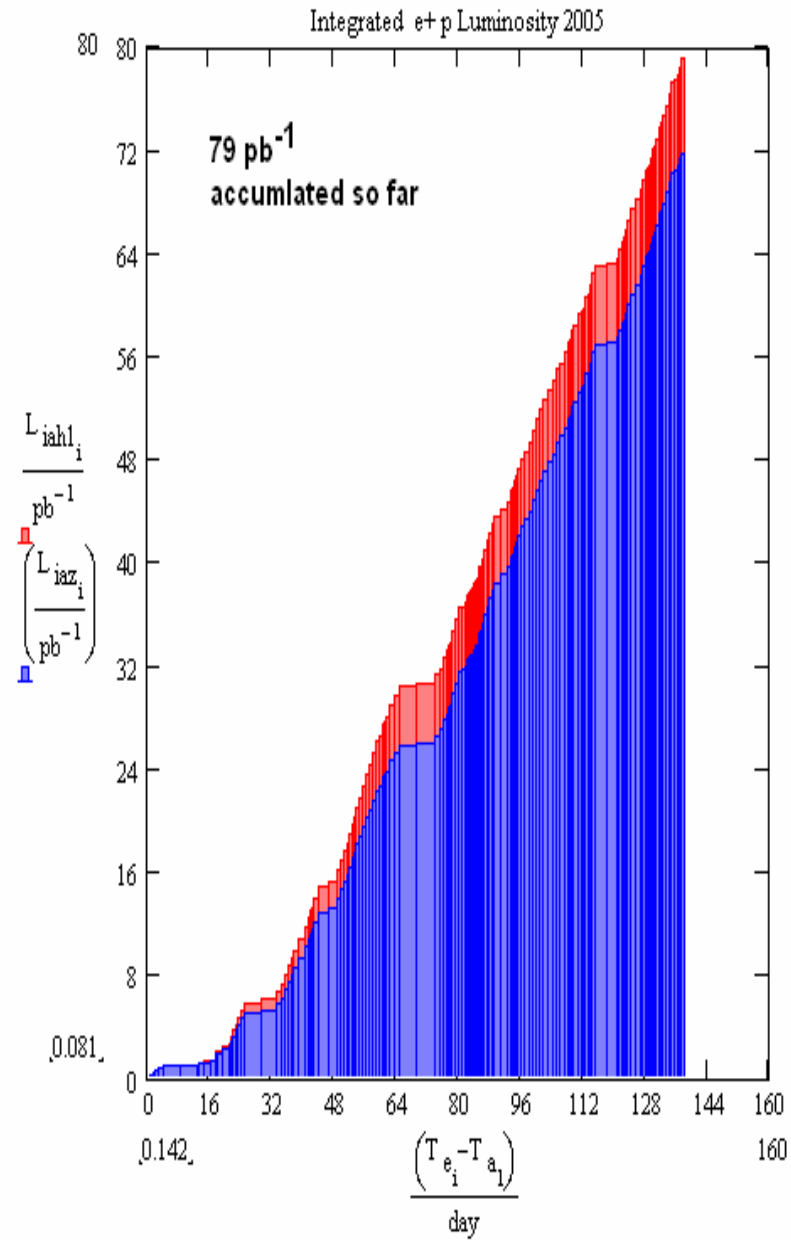


BU repair not counted as inefficiency



Overall Efficiency Electron Proton Run 43% so far





Plan for Operation in May/June

- Increase electron beam current and consolidate performance
- Increase Number of bunches, after clear progress in electron beam current is established ($I_e > 40\text{mA}$ for all runs)
- We plan for some machine shifts following the maintenance day in June
- The June maintenance day may come somewhat earlier in case HERMES needs a detector repair
- Rotator can be switched any time, need to retune polarization
- Mirror Tunes can be tried out any time, need to invest one week of luminosity operation

Shutdown Planning

Machine prefers:

Start Shutdown Nov 14 (all accelerators)

Startup HERA with Beam: Last week of January

Luminosity operation starts in 2nd week of February

→ *This will allow to refurbish all the BU magnet with new coils*

Should a BU fail before the shutdown, then it can be repaired within a week (even if broken coil in SL/OR)

We expect to perform only one more radiation interlock test until the end of HERA

BU Delivery Schedule

Original Schedule

3 Coils in April 05

5 coils in June 05

5 coils in July 05

5 coils in October 05

6 coils in December 05

Revised Schedule

→ 2 coils in May (tomorrow)

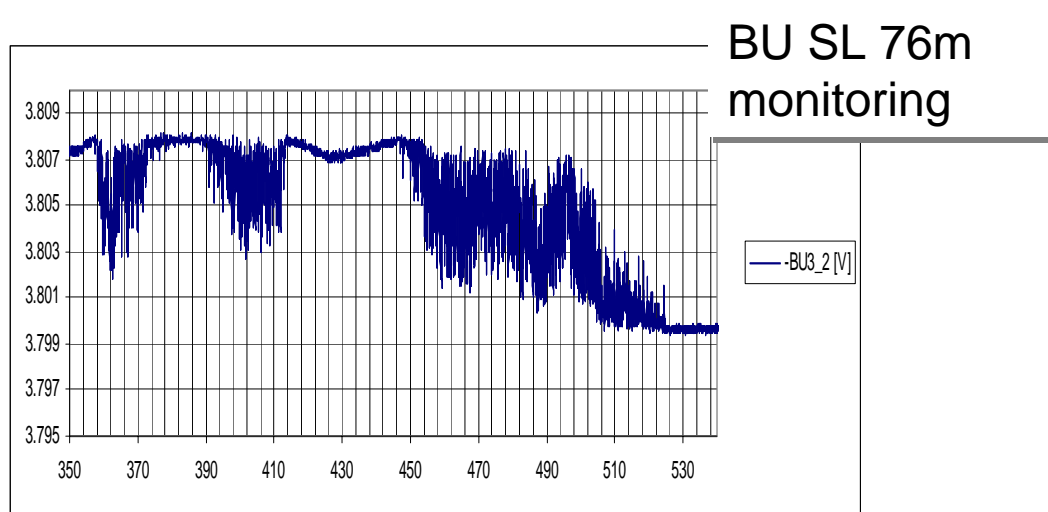
→ 4 coils in May

→ 6 coils in July

→ 8 coils in September

→ 5 coils in November 05

No news from BU monitoring



Technical Issues

- Bu Repair
- GN refurbishing parked for the time being
- Recabling of temperature monitoring in the IR's
- Protection against uncontrolled p-beam loss now complete
- Plan for recovering the full cryogenic supply redundancy is being implemented

Accelerator Physics and Performance Issues

Mirror tunes

→ larger polarization

El-Beam line optics correction

→ more efficient e-Injection

Automatic proton tune control

→ less proton losses on the ramp

Electron Orbit Stabilization

→ less p-emittance growth, larger lumi, less backgrounds

Higher order Head instability

→ more reliable p-Operation

Longitudinal instability,
longitudinal feedback system
Electron-dust and ion effects

→ short p-Bunches, more luminosity

→ larger e-lifetime, more luminosity

Beam based alignment

→ more polarization