

Stefan Schmitt
Convenor's meeting
June 18, 2003

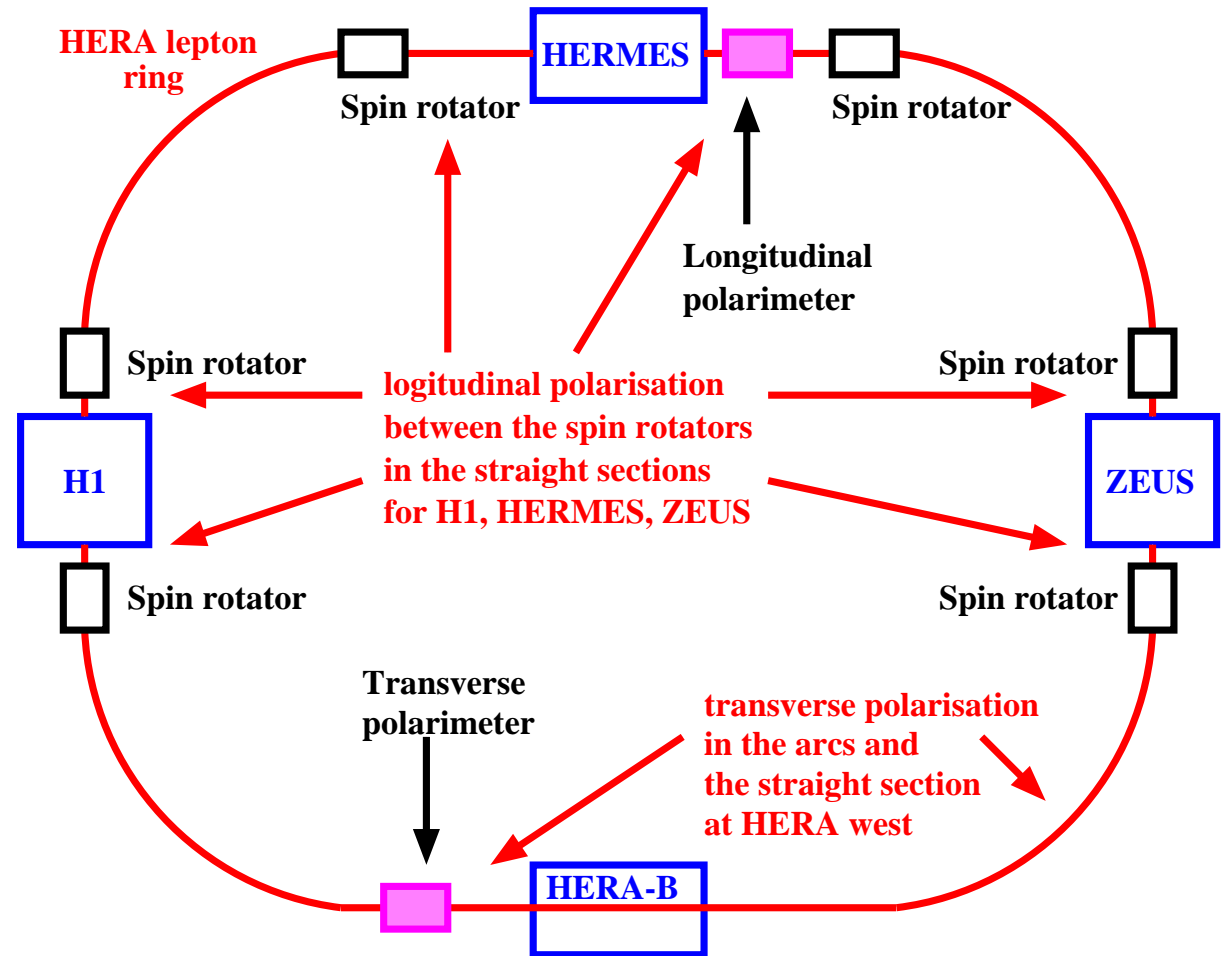
Polarisation and polarimeters at HERA 2

Status and prospects

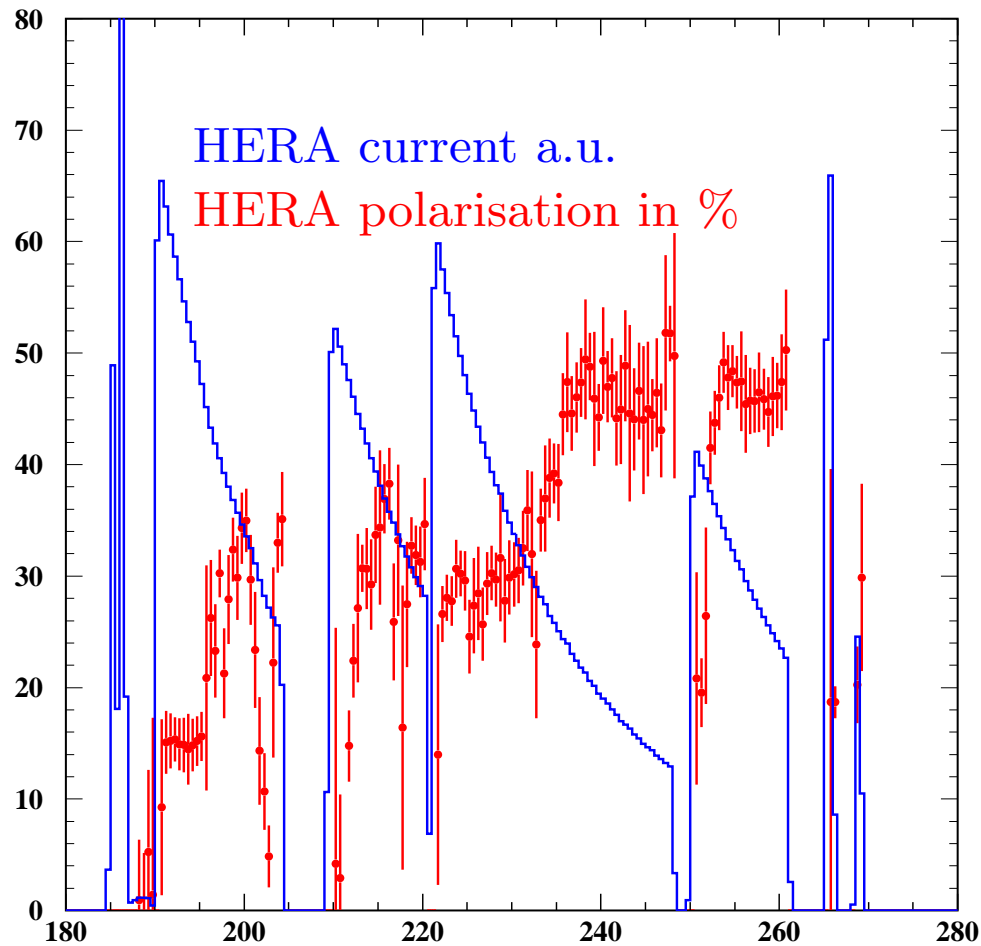
- Introduction
- Polarisation tuning: it worked!
- Polarisation: why should H1 care?
- The HERA polarimeters
- The POL2000 group
- Polarimeter expert “coverage”

Introduction: Polarisation and polarimeters at HERA

- Built-up of polarisation in ≈ 30 min (Sokolov-Ternov effect)
- Transverse polarimeter (TPOL) is located near HERA-B
- Longitudinal polarimeter (LPOL) is located between HERMES spin rotator
- LPOL Fabry-Perot cavity successfully installed during shutdown

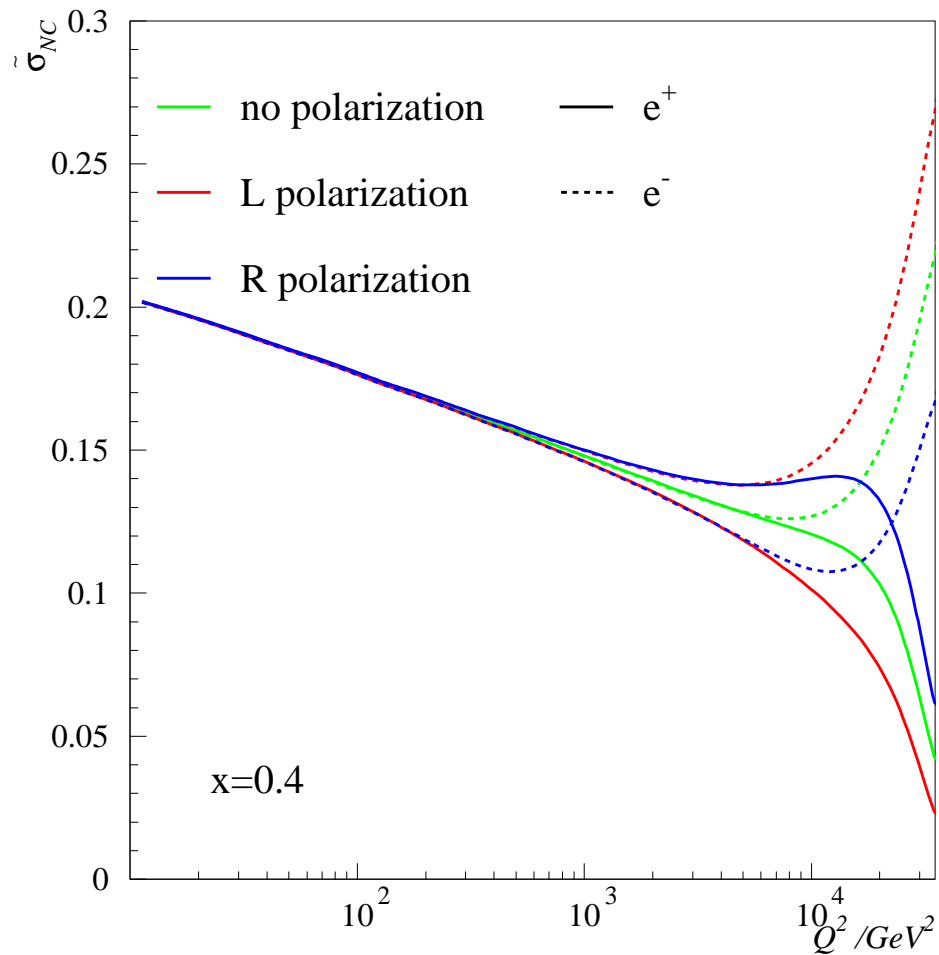


Polarisation tuning in February/March 2003



- Plot shows HERA current and polarisation from spring 2003 polarisation tuning phase ($P > 45\%$ seen)
- All H1 data will be polarized after the restart

Polarisation: why bother?



- NC and CC cross-section depends on polarisation
- All analyses at high Q^2 need to know about polarisation
- If polarisation is not known for some part of the data, it is lost for high Q^2 analyses
- **Polarimeters and luminosity system are of similar importance for many analyses**

The HERA polarimeters

Two polarimeters are running in parallel (redundancy, syst. checks)

1. Near HERA-B: the transverse polarimeter (TPOL)

$\Delta P = 1\% \oplus 3\%$ per minute, avg over all bunches

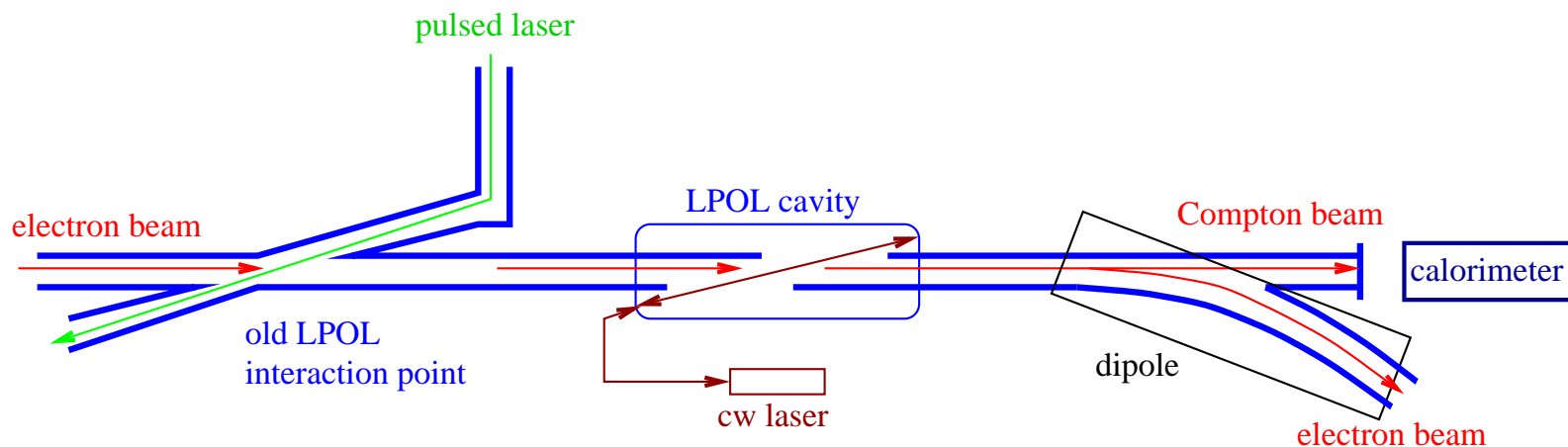
2. Near HERMES:

- (a) either the “old” longitudinal polarimeter (LPOL)

$\Delta P = 1\% \oplus 2\%$ per minute, avg over all bunches

- (b) or the new laser cavity, built by Orsay (LPOL cavity)

$\Delta P = 1\%$ per minute per single bunch



The POL2000 group

- The POL2000 group consists of several people from HERMES, ZEUS, H1, DESY
- TPOL upgrade projects
 - DAQ upgrade (finished)
 - Add silicon and fiber detector for calibration (ongoing)
 - New offline analysis
- LPOL hardware upgrade projects
 - Install Fabry-Perot cavity, new DAQ system (ongoing)
 - Install new radiation-hard Calorimeter (planned)

Polarimeter expert “coverage”

- ☹ old LPOL: covered by HERMES (NIKHEF)
- ☹ LPOL cavity: commissioning by H1 Orsay. But
- ☹ no Orsay experts will be permanently based at DESY
- ☹ LPOL new calorimeter: not covered
- ☹ TPOL: only one expert left from pre-HERA 2 phase.
Contract expires this summer, prolongation unclear.
Two new experts will enter from ZEUS.
- ☹ TPOL silicon and fiber detector: covered by ZEUS.
- ☹ TPOL analysis: H1 expert leaving soon, ZEUS student starting this summer

Conclusions:

We (H1, ZEUS, HERMES) need more people to enter the polarimeter business

- Need 1 or 2 additional experts for the TPOL
- Try to keep “old” TPOL expert for another 1–2 years
- Need several people for the polarimeter analysis
- Need more people to join the LPOL cavity project: build new calorimeter, online/offline analysis, DESY based experts, ...

Don't let the other experiments decide on the quality of the polarisation measurements!

Next polarimeter meeting: June 30, 9:00-11:00 in SR 4a