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PRC closed session

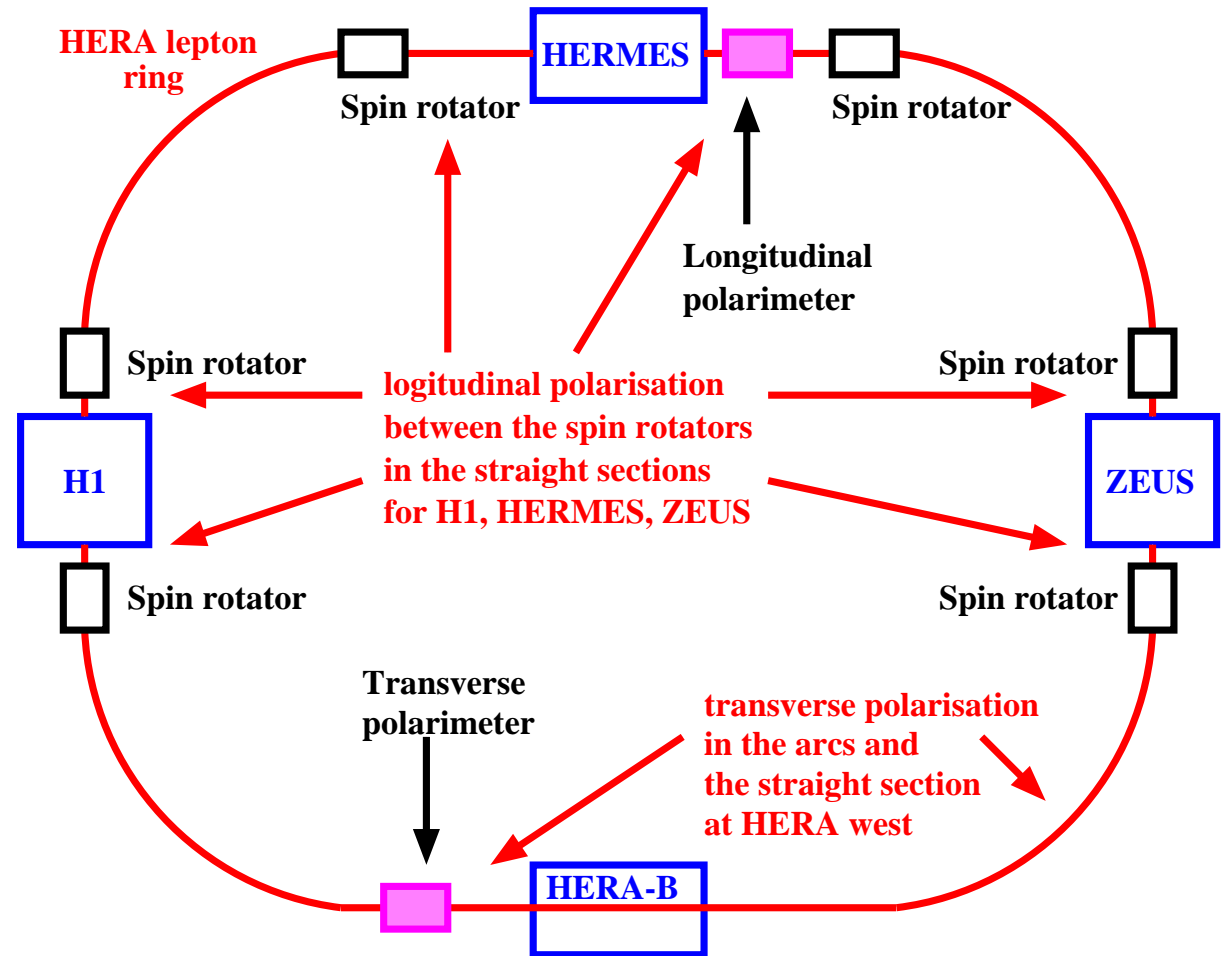
April 7, 2003

The HERA polarimeters status report

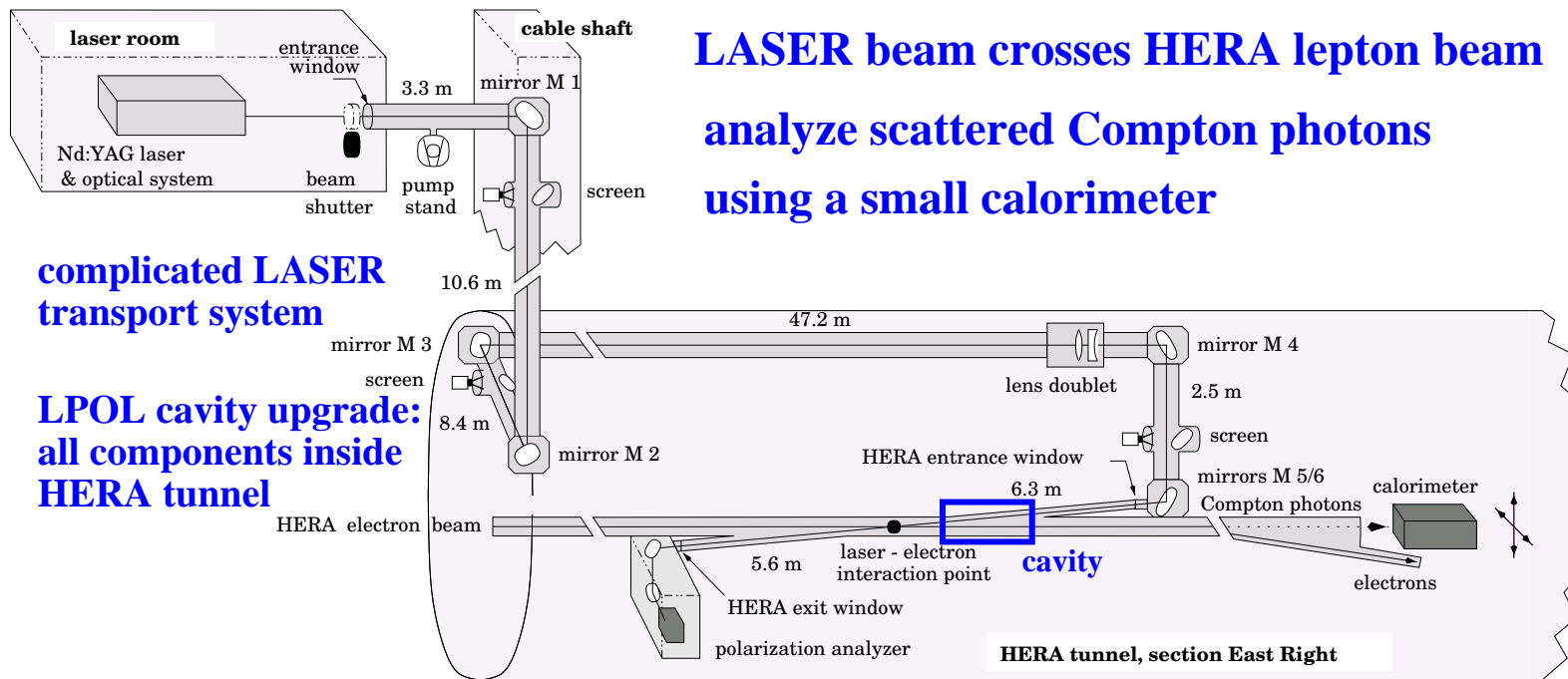
- Introduction
- Polarimeter performance during HERA polarisation tuning
- HERA shutdown work: status of LPOL cavity, TPOL silicon detector
- POL2000 projects later this year
- POL2000 referee report (talk by Joachim Mnich)

Introduction: Polarisation and polarimeters at HERA

- 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



Polarimeter setup (LPOL)

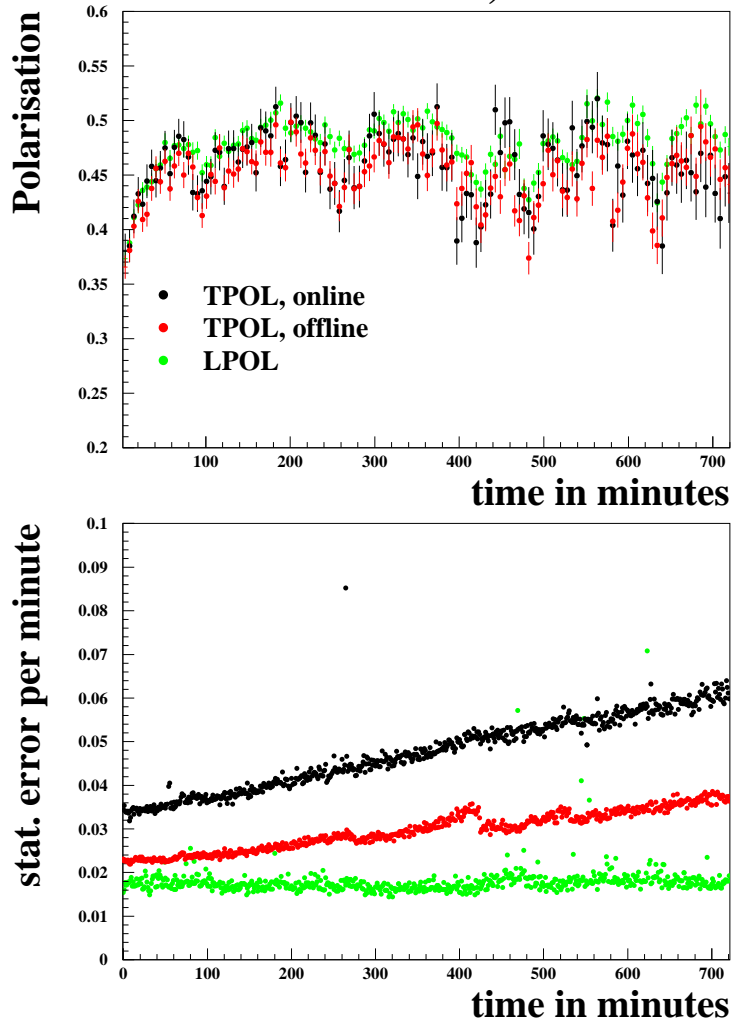


LPOL: measure energy asymmetry for left/right LASER helicity

TPOL: measure spatial asymmetry for left/right LASER helicity

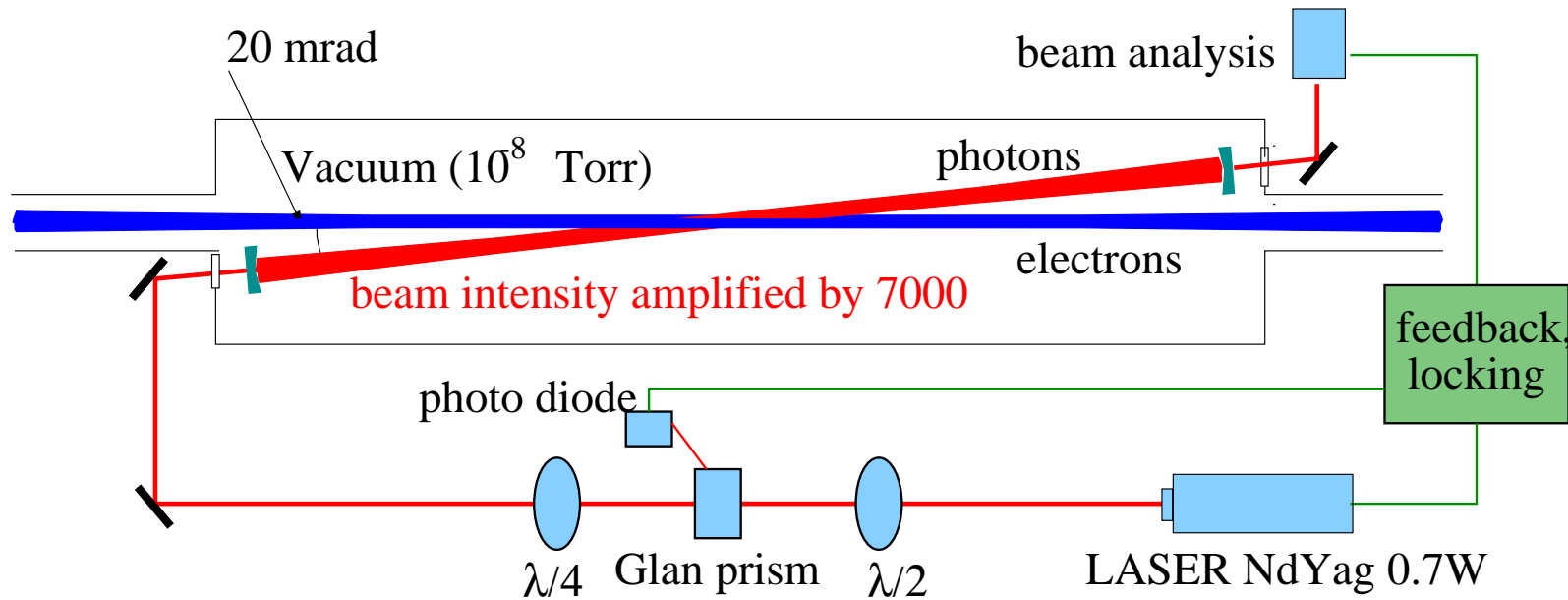
HERA Pol tuning in 2003: polarimeter performance

Data from 1st of March, 5 min average



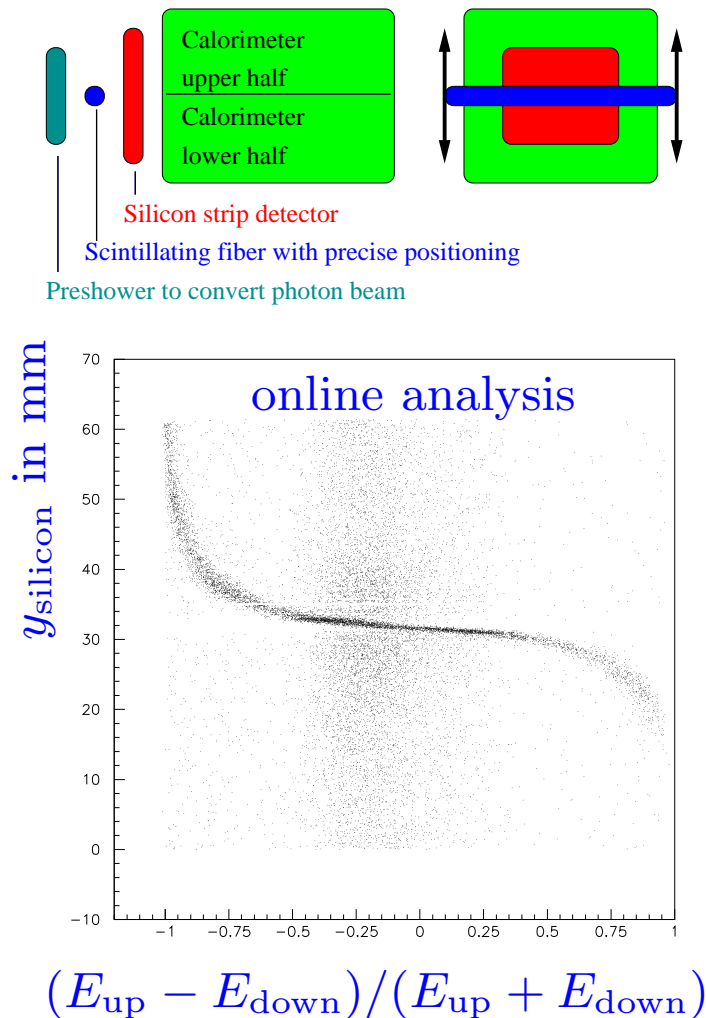
- High $\mathcal{P} > 50\%$ with all spin-rotators and colliding beams:
Congratulations to HERA
- Both polarimeters working, agreement LPOL/TPOL reasonable
- Minor technical problems, to be sorted out during HERA routine operation (low TPOL luminosity, etc)
- Not enough data collected yet to clarify all aspects of calibration and analysis

Shutdown activities: LPOL Cavity



- LASER with 0.7 W intensity is amplified in a Fabry-Perot cavity
Increase probability for Compton scattering
- LPOL cavity is now installed in the tunnel
- Cavity locked, gain factor 5×10^4 reached (design: 1×10^4)
- LASER beam polarisation analyser will be installed next week

Shutdown activities: TPOL Silicon detector repair



- Transverse polarisation \propto spatial coordinate y .
Calorimeter: energy asymmetry $\eta = \frac{U-D}{U+D}$,
non-linear transformation $\eta = \eta(y)$ (testbeam)
Main source of TPOL systematic uncertainties
- Silicon detector: measure y for a sub-sample of events, calibrate $\eta(y)$ online
- Silicon detector installed in 2001/2002, with $\approx 10\%$ dead channels
- Replacement this shutdown: delayed due to faulty front-end on new silicon detector
 \rightarrow Install later this year if delay $>$ shutdown
- Note: new silicon not crucial for data-taking. New offline analysis determines $\eta(y)$ from fit to calorimeter data

POL2000 projects and plans later this year

- Polarimeter operation: help to coordinate polarimeter shifts between experiments, institutes.

Note: TPOL is short of experts. Discuss with experiments and institutes how to solve this problem

- Encourage experiments to get into the polarimeter analysis
- Support commissioning of the LPOL cavity
- Find a group of people to build a new calorimeter for the LPOL cavity:
 - existing crystal calorimeter is not made for single photon mode
 - existing sampling calorimeter is not radiation hard