HERA Coordination Meeting

November 19, 2001

F. Willeke DESY MHE

- Progress and Status of Commissioning
- Plans until the end of 2001
- Preliminary Plans for 2002 Running

Recommissioning

- No overwhelming problems so far…good progress, we are more or less on schedule
- new superconducting magnets are working well, but some problems with *quench protection* and *lead cooling* needed and still needs optimization
- initial commissioning tough:
  - many improvements" on the whole system, everything needed to be re-commissioned,
  - vacation time,
  - summer-time cooling and power problems
  -one of the new IR quadrupoles had a short-cut coil (installation mistake) => 3 weeks more time needed

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HERA Commissioning Schedule 2001

9/11/01 17:56

Beam injected accelerated routinely

Done, but needs some more iterations to improve optics

Done, coupling ok, no bad surprises

Just at the beginning
Do net yet understand
Alignment

	Begin	Duration/Days	End
Startup 2001	26-Jul-01	1.0	27-Jul-01
Establish Beam Operation p	27-Jul-01	17.0	13-Aug-01
Maintenance day	13-Aug-01	0.7	13-Aug-01
Establish Beam Operation e	13-Aug-01	33.0	15-Sep-01
Explore Optics	15-Sep-01	8.7	24-Sep-01
Maintenance day	24-Sep-01	0.7	25-Sep-01
Explore Optics	25-Sep-01	6.7	1-Oct-01
Turn-On Detector Fields	1-Oct-01	17.7	19-Oct-01
Set up & Optimize Collisions	19-Oct-01	11.3	30-Oct-01
Investigate Synchrotron Radiation	30-Oct-01	20.0	19-Nov-01
Break for Experiments	19-Nov-01	3.0	22-Nov-01
First Luminosity Runs	22-Nov-01	12.7	5-Dec-01
Polarization Tuning	5-Dec-01	7.0	12-Dec-01
Turn on North/South rotators	12-Dec-01	10.0	22-Dec-01
Maintenance Period	22-Dec-01	25.0	16-Jan-02
Startup 2002	16-Jan-02	3.0	19-Jan-02
Polarization Tuning	19-Jan-02	11.0	30-Jan-02
Start Luminosity Run	30-Jan-02	1.0	31-Jan-02

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Commissioning Results

- **Beam Handling**: Both Beams can be **routinely** be **injected** with reasonable injection efficiency, **accelerated** to the top energy and **brought into collisions**
- **Beam optics** is satisfactory for leptons, for protons optics is still being investigated
- **Detector fields** are compensated by skew quadrupoles, the **coupling is under control,** the mechanical motion due to **magnetic forces on the s.c. magnets can be handled** without problems, ZEUS can close its calorimeter with stored e-beam
- **Luminosity:** Beams collided in H1 **Specific Luminosity close to design** (within 10% at ZEUS ~)
- **Backgrounds:** Beginning of understanding of **SR**

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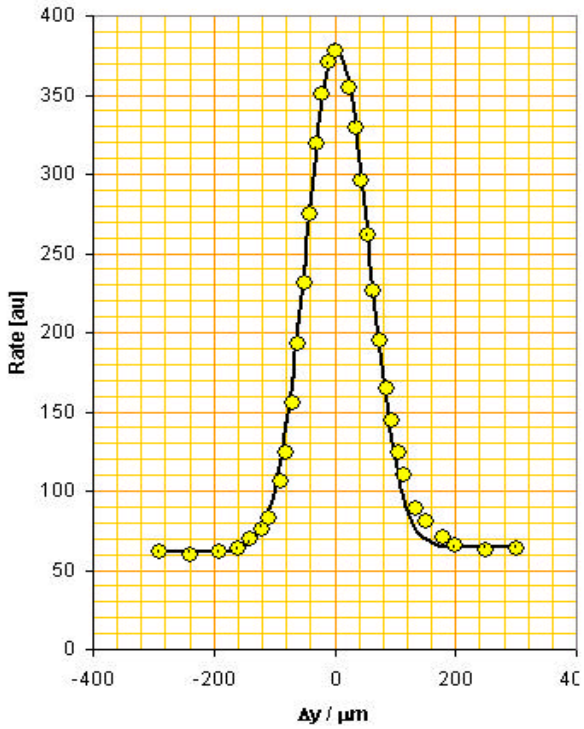
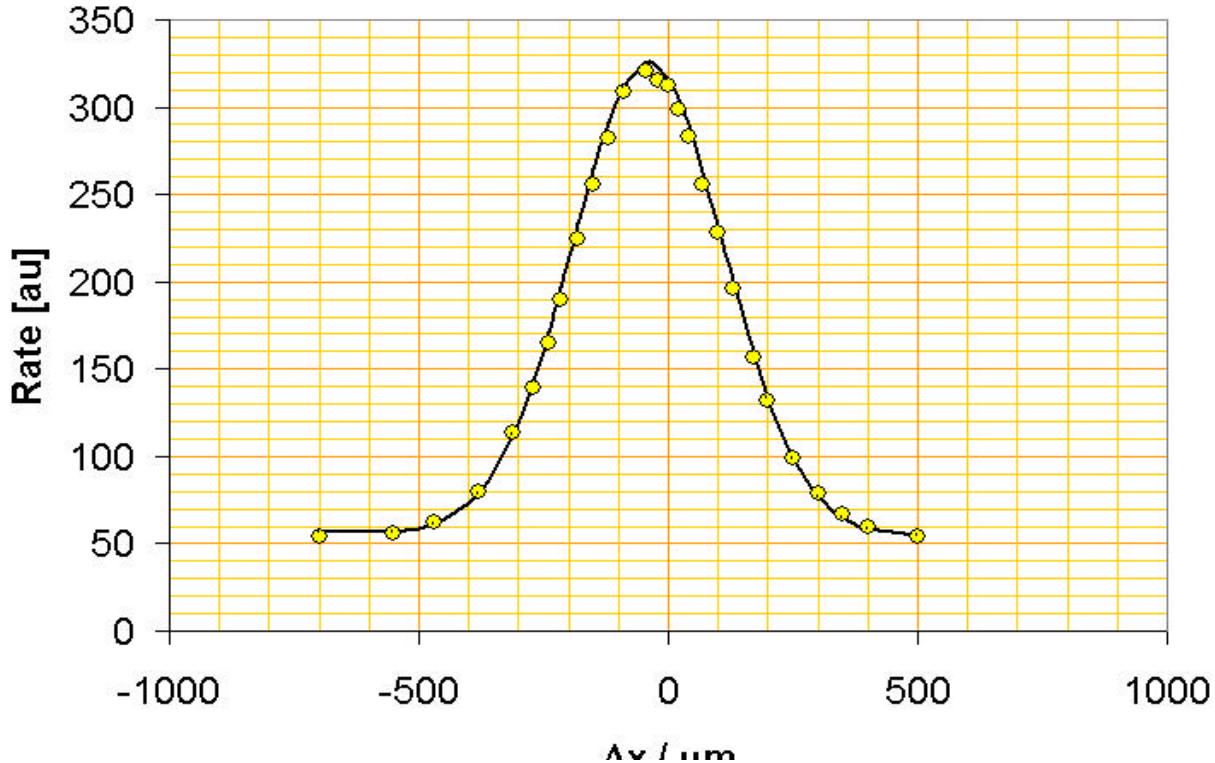
Measured Spec. Luminosity: L_{spec} = **1.68** 10^{30} $mA^{-2}cm^{-2}sec^{-1}$

Design Specific Luminosity: L_{spec} = **1.88** 10^{30} $mA^{-2}cm^{-2}sec^{-1}$

Vertical Lumiscan H1 2.11.01
Fit: Σ_y = 51 μm



Horizontal Lumiscan ZEUS 2.11.01
Fit: Σ_y = 153 μm



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Concerns

- Proton beam lifetime in collisions sometimes poor 10h

→ revisit proton beam optics

- Background rates are quite large, not sufficient understanding
- more synchrotron radiation and beam-based alignment studies

→ alignment studies

- Beam intensities are only low so far

→ NEG pumps in the IR will be activated now

Present Status

- All new hardware works satisfactorily
- commissioning proceeds like planned, some problems are easier, others are more tough than expected
- November power breakdown caused a lot of damage, expect to suffer for the next few month
- large effort will be necessary to bring the two beam to full intensity and to deliver luminosity runs with good conditions and high intensity

HERA Commissioning Schedule 2001

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Plans until the end of 2001

First Luminosity run

Expect a slow start after recovery from Shutdown and November Power failure

Propose to skip

This should still be done

Stop Operations:

Friday, Dec 21

Restart January 14

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Plan for 2002 Running

- Start up January 16
- First Polarization Studies?
- Luminosity Runs Start end of January
- Need 2 days of Machine Studies every week (4+1 shifts)
- Plan to turn to electrons if e+ running works well, earliest possible date in April
- Regular maintenance days on every first Tusday of a month
- Running until December 2002

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