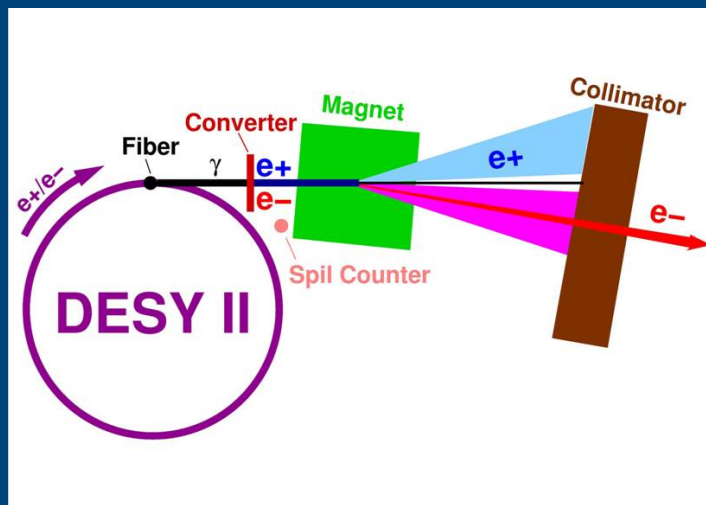




# DESY Test Beam Facilities - Status and Plan

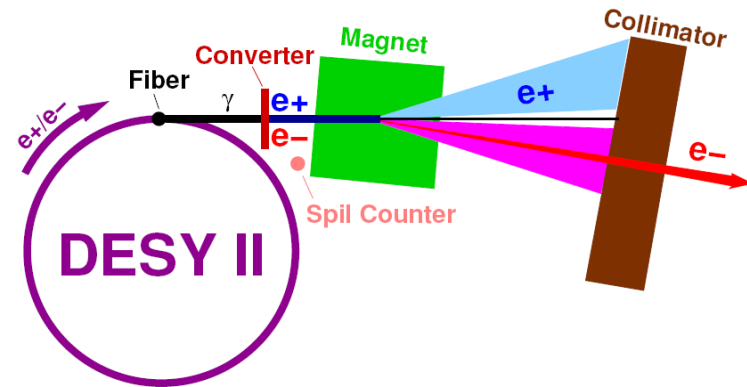


Norbert Meyners, DESY

ALCPG Workshop 2011  
Eugene, March 19-23, 2011

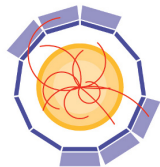
# DESY Test Beam

- DESY provides three test beam lines with 1-5 (-6) GeV/c electrons
- Very simple system, no beam optics, just momentum selection via dipole magnet.
- Bremsstrahlung beam generated by a carbon fibre in the circulating beam of the electron/positron synchrotron DESY II.



- Photons are converted to electron/positron pairs with a metal plate.
  - Beam is spread out into a horizontal fan with a dipole magnet.
  - Collimator cuts out final beam.

- Financial support for “Transnational Access” can be given from the EU-funded project:



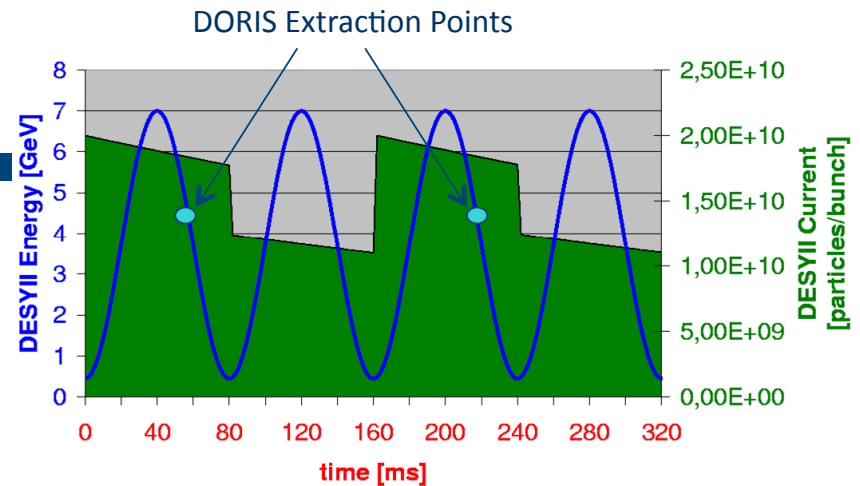
**AIDA**

(...ading group has to be from the EU.)



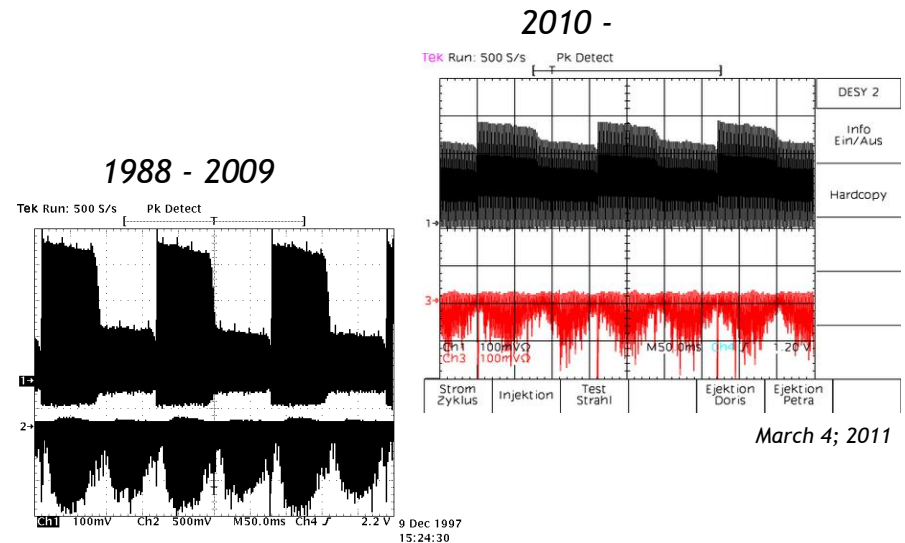
# DESY II

- Mainly injector for DORIS and PETRA (synchrotron light sources).
  - ➔ High availability (10-11 month/a)
  - ➔ Demand: High reliability
  - ➔ Not much room for improvements for the test beams
- A lot of effort by machine coordinator to increase the test beam rates.
  - Top-Up (reduced current; ~10%) lasts ~15sec every ~8min (March 2011; depends on PETRA lifetime)
  - Extraction to DORIS during ramp on falling slope (●)
  - Bypassing fibres a low energy ➔ less beam loss ➔ **12500e+/sec\*cm<sup>2</sup> at 2 GeV at beam 21 (Feb.2011)**



- Machine cycles with 12.5 Hz
- Injection every second (or forth) cycle

Norbert Meyners, DESY Test Beam



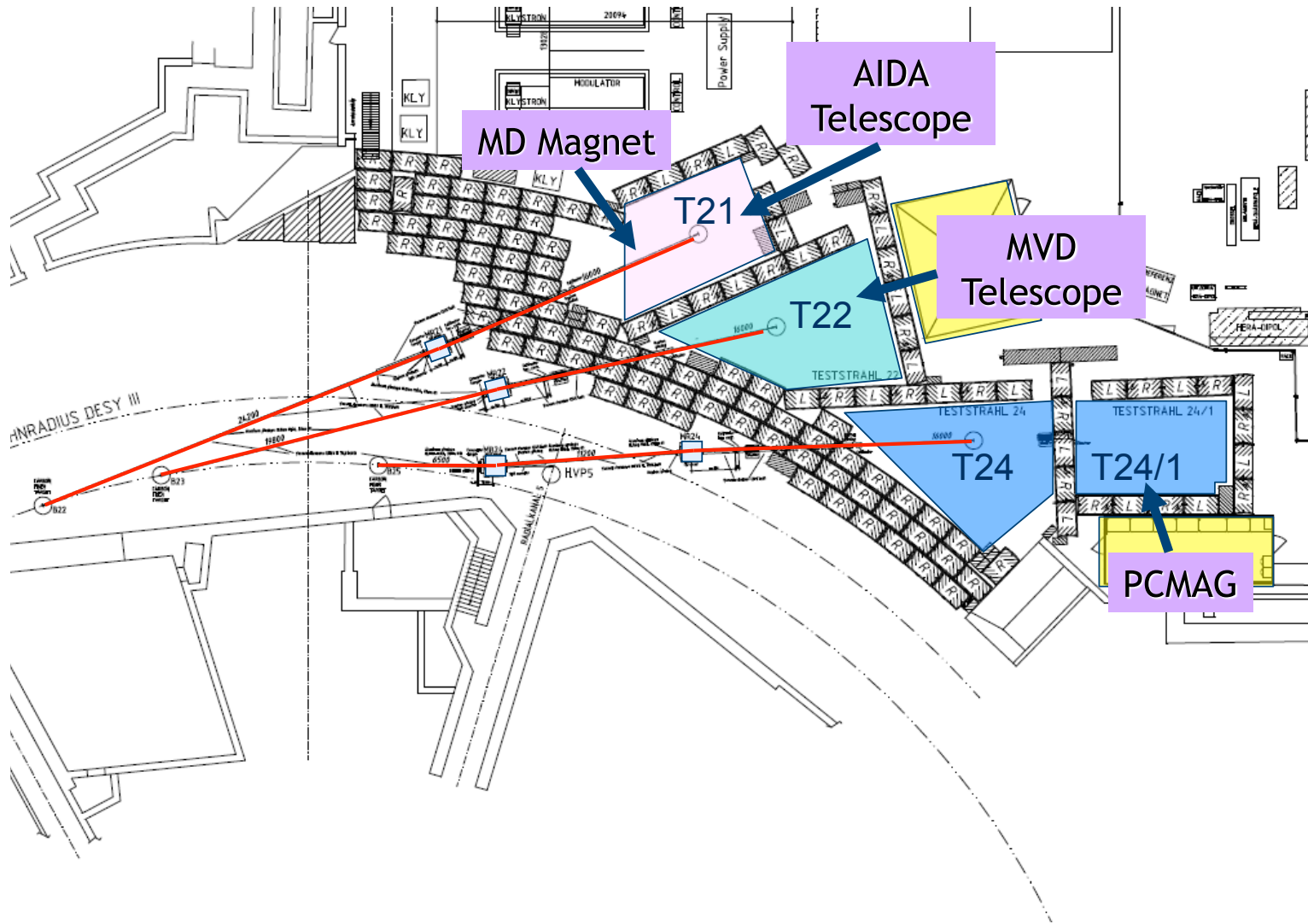
# Facilities for Test Beam User

- All three test beam lines have
  - Interlock systems
  - Magnet control
  - Patch panels with preinstalled cables
  - Gas warning systems
  - Fast internet connection (DHCP)  
(100Mbit / 1Gbit possible)
- The user can ask for:
  - Translation stages
  - Premixed gases
  - Big Dipole Magnet (1T)
  - Superconducting Magnet (1T)
  - Beam Telescopes:
    - MVD Telescope
    - AIDA Telescope
- The users typically bring:
  - Data Acquisition incl. computers
  - Trigger scintillators



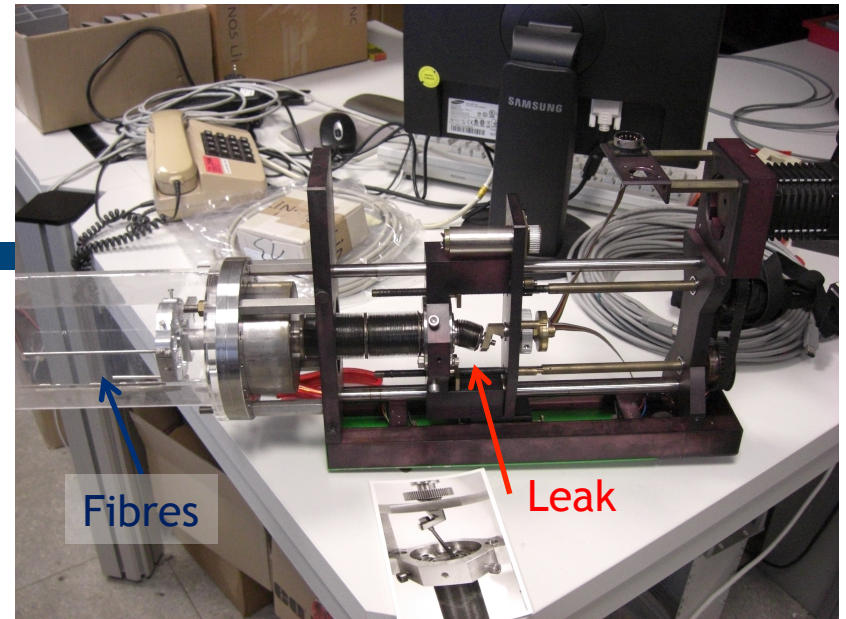


# Test Beam Layout

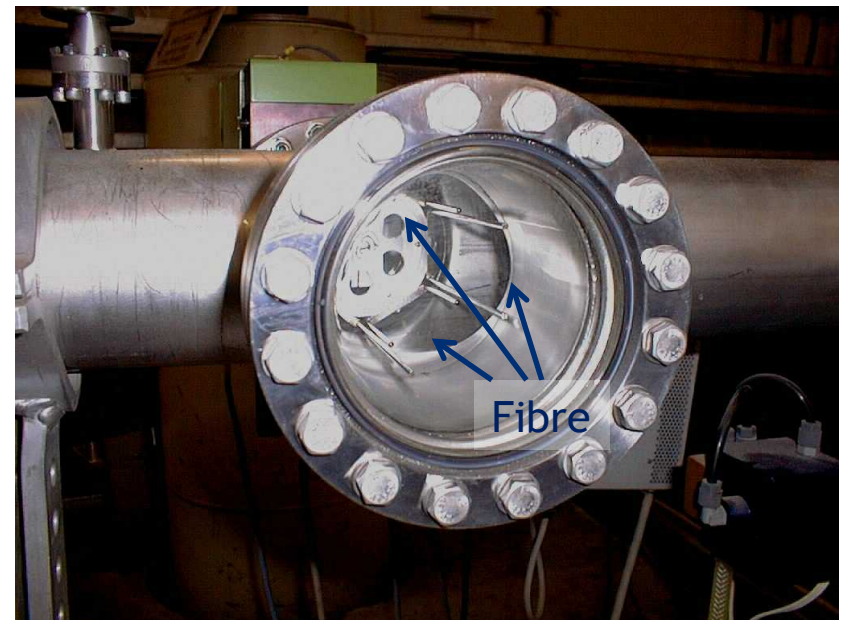


# Review 2010

- 13 User Groups
  - 53 Weeks scheduled
  - Severe accident
    - Vacuum leak at one carbon fibre holder
      - Unfortunately two were dismantled
        - ➔ lost two beams for 5 weeks (May/June)
        - ➔ Luckily we could squeeze all user in one beam area (24)
      - Water leak at dipole magnet (24) (end May)
        - ➔ 1 user lost 1 day
        - ➔ Provisional fix stayed until regular maintenance week
        - ➔ Exchange dipole magnet
- Uff!**
- ➔ Design and build new fibre holders
  - ➔ Installation in summer 2011



Current Fibre Target





# Outlook 2011

- Summer shutdown: July 11 –Aug. 14; 2011
  - OLYMPUS detector installed at DORIS
    - ➔ Install 3 new fibre target holder
- Machine maintenance and development:
  - Every Wednesday morning
  - 3 days every 6 weeks (DORIS/PETRA Service Weeks)
- OLYMUS detector requires change from e- to e+ every 10min
  - ➔ no beam for minutes
- PCMAG (TPC solenoid): Upgrade in summer
  - AIDA telescope : At CERN summer & fall



# Summary

- DESY test beam is running: Feb. 14 - July 10 and Aug. 15 - Dec. 21; 2011
- Users can apply for beam time through DESY test beam coordinators  
→ up to three weeks possible, longer terms negotiable

You can apply for test beam time at DESY

***[testbeam.desy.de](http://testbeam.desy.de)***

Or contact: [testbeam-coor@desy.de](mailto:testbeam-coor@desy.de)

You can apply for financial support



**AIDA**

Advanced European Infrastructures  
for Detectors at Accelerators

See [aida.web.cern.ch](http://aida.web.cern.ch)

- DESY provides three test beam lines with 1-6GeV/c electrons
- Very simple system, no beam optics, momentum selection via dipole magnet
  - Perfect facility for proof of principle studies, efficiency studies and also resolution studies
    - Infrastructure simple and flexible



# End

- Thank you for your attention!

*(From the DESY front page)*



- See you at DESY test beam!

- Back Up Slides



# Schedule 2011 1.Half

testbeam.desy.de

04.03.2011

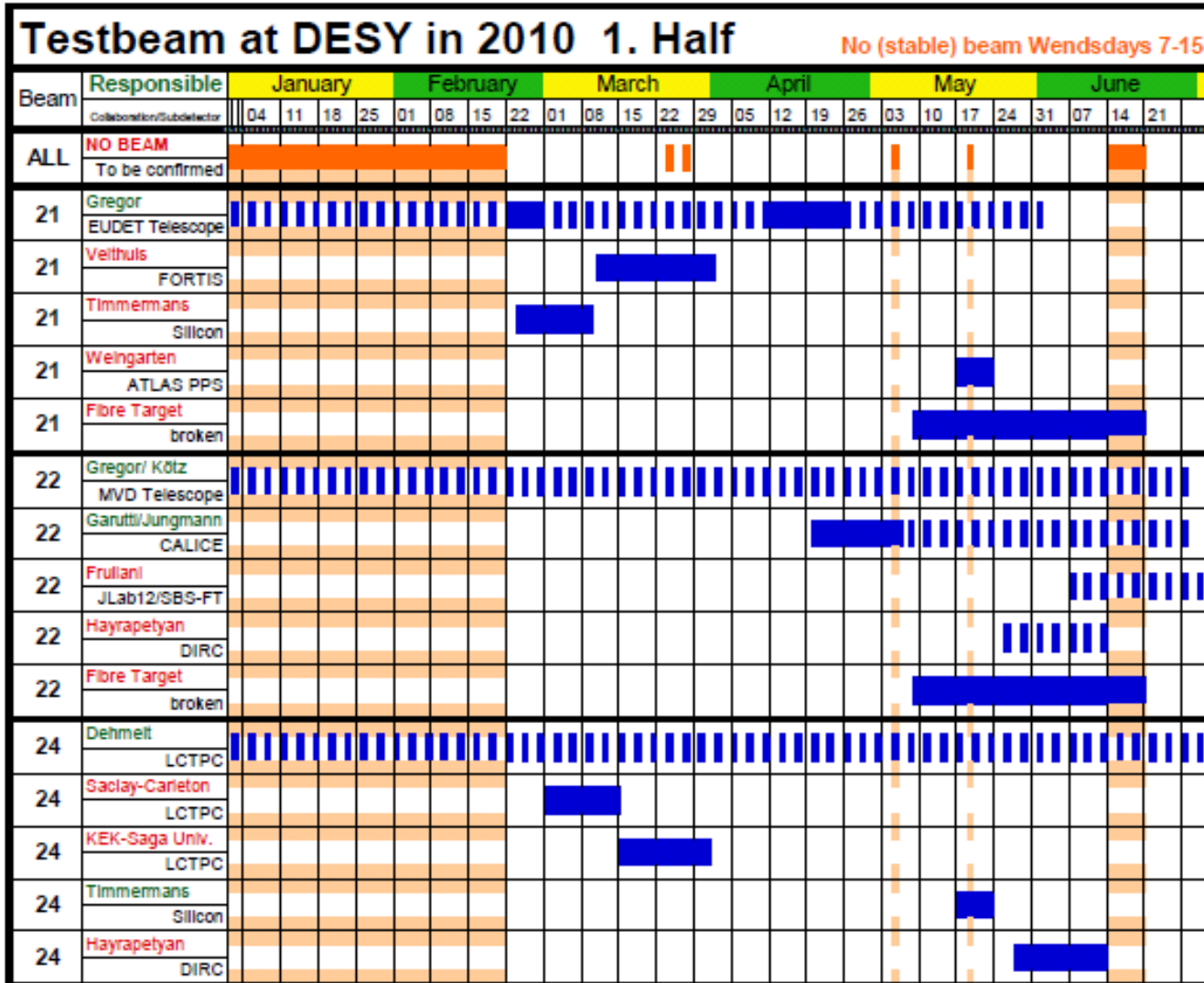
Testbeam at DESY in 2011 1. Half		No (stable) beam Wednesdays 7-12																									
Beam	Responsible	January					February					March					April				May				June		
	Collaboration/Subdetector	03	10	17	24	31	07	14	21	28	07	14	21	28	04	11	18	25	02	09	16	23	30	06	13	20	27
ALL	NO BEAM/Cabling	[Orange bar]										[Orange bar]		[Orange bar]		[Orange bar]		[Orange bar]		[Orange bar]		[Orange bar]		[Orange bar]		[Orange bar]	
	Fixed! 6.12.2010																										
21	Garutti	[Blue bars]																									
	CALICE	[Blue bars]																									
21	Gregor	[Blue bars]																									
	EUDET Telescope	[Blue bars]																									
21	Permegger	[Blue bars]																									
	ATLAS IBL	[Blue bars]																									
21	Winter	[Blue bars]																									
	FIRST	[Blue bars]																									
21	Jeans	[Blue bars]																									
	CALICE/SiW ECAL	[Blue bars]																									
22	Gregor/ Kötz	[Blue bars]																									
	MVD Telescope	[Blue bars]																									
22	Kaukker	[Blue bars]																									
	Beam Loss Monitor	[Blue bars]																									
22	Diefenbach	[Blue bars]																									
	Olympus	[Blue bars]																									
22	Hartig	[Blue bars]																									
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22	ILC/FCAL	[Blue bars]																									
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24	Diener/Ghazaryan	[Blue bars]																									
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24	Saclay-Carleton	[Blue bars]																									
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24	Hasell, Surrow	[Blue bars]																									
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24	DESY/Lund	[Blue bars]																									
	LCTPC	[Blue bars]																									





# Schedule 2010 1.Half

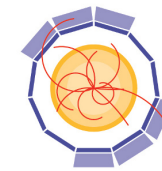
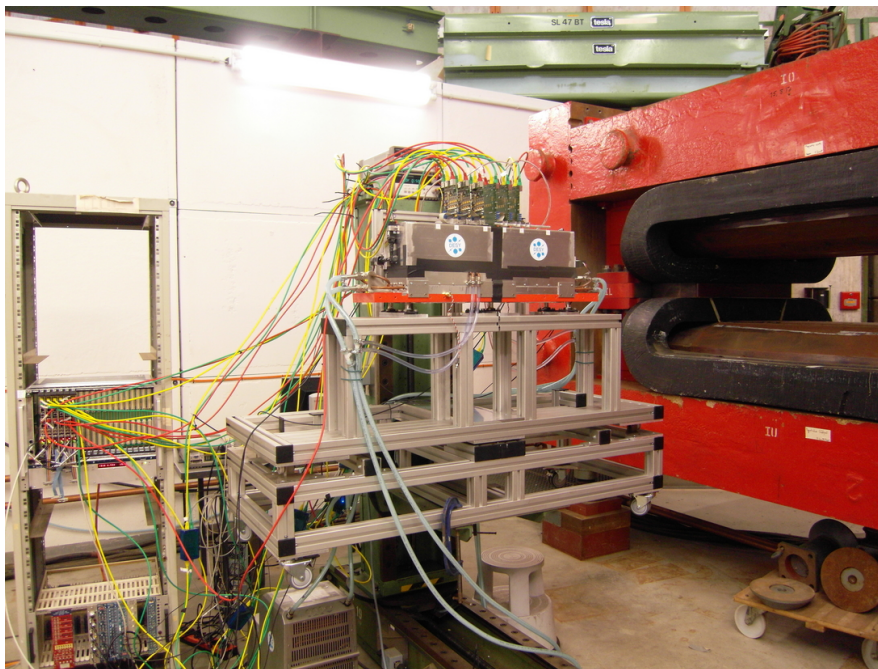
02.12.2010





# Test Beam Area 21

- Recently refurbished -> Home of AIDA telescope



# AIDA

- Pixel beam telescope:
  - 6 layers of Monolithic Active Pixel Sensor (MAPS) detectors
  - DEPFET and ISIS pixel detectors for validation
  - DAQ system
  - Demonstrator telescope in use since summer 2007

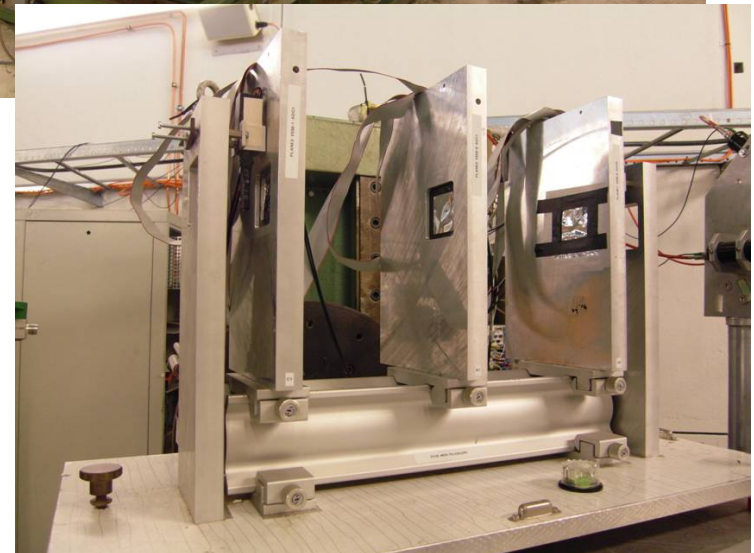
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More information

[Aida.web.cern.ch](http://Aida.web.cern.ch)

# Test Beam 22: ZEUS Telescope

- Location of ZEUS MVD telescope (build in 1998)
- Telescope parameters:
  - 300  $\mu\text{m}$  thick single-sided Si strip sensors
  - Each plane with 2 sensors perpendicular to each other
  - Strip pitch: 25 $\mu\text{m}$
  - Readout pitch: 50 $\mu\text{m}$
  - Active area: 32x32 mm<sup>2</sup>
  - Trigger window: 8x8 mm<sup>2</sup>
  - DAQ was upgraded to AIDA/EUDET like system
- Plans for next years:
  - keep telescope running
  - improve software

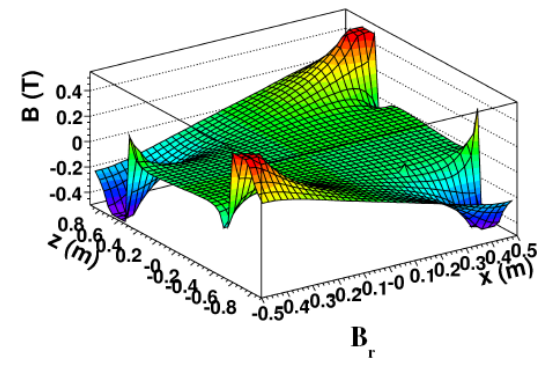
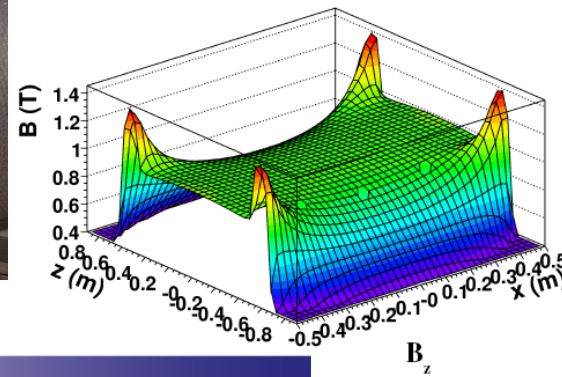
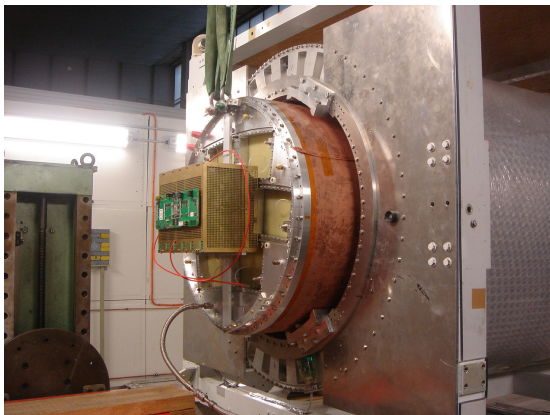


# Test Beam 24/1: PCMAG



- Large bore magnet:

- 1Tesla,  $\varnothing \approx 85$  cm, stand-alone He cooling, supplied by KEK
- infrastructure (control, field mapping, etc.) through EUDET
- Magnet fully instrumented at DESY and ready for use
- **Upgrade cryogenic summer 2011**



Now supported through:



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