

News from DESY.

Joachim Mnich

Plenary ECFA
CERN November 22, 2012



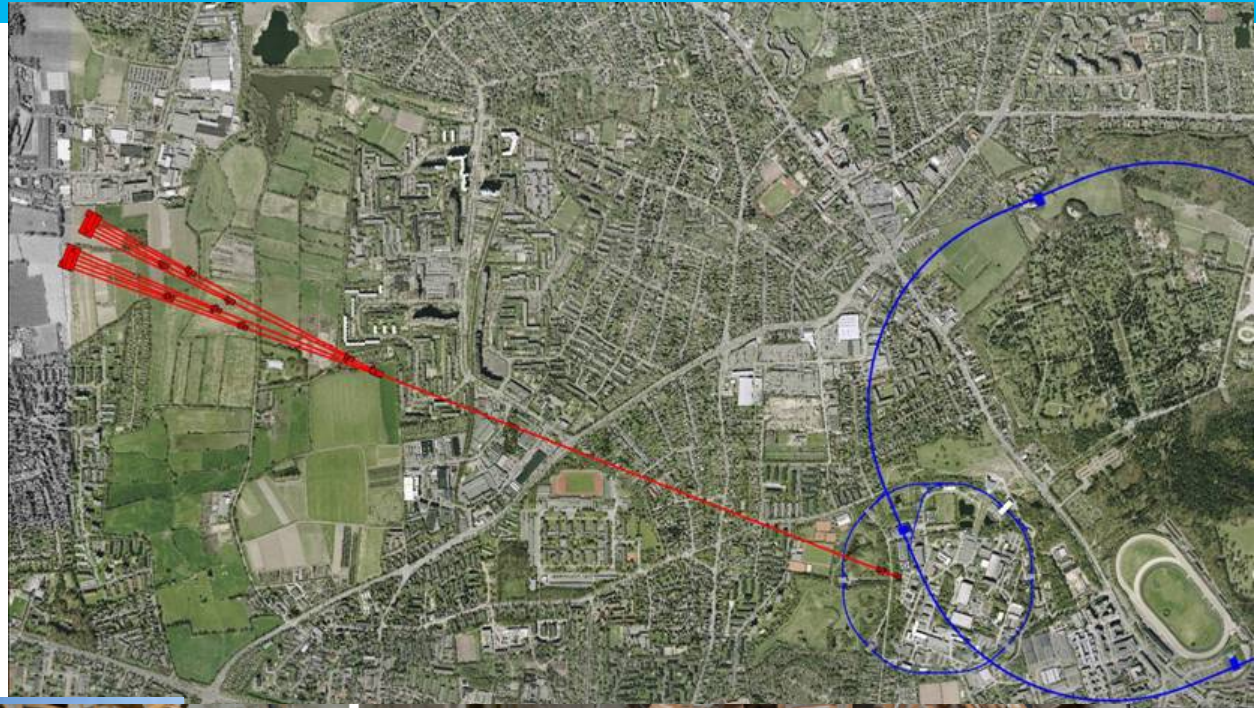
Beschleuniger | Forschung mit Photonen | Teilchenphysik

Deutsches Elektronen-Synchrotron
Ein Forschungszentrum der Helmholtz-Gemeinschaft



Status European XFEL

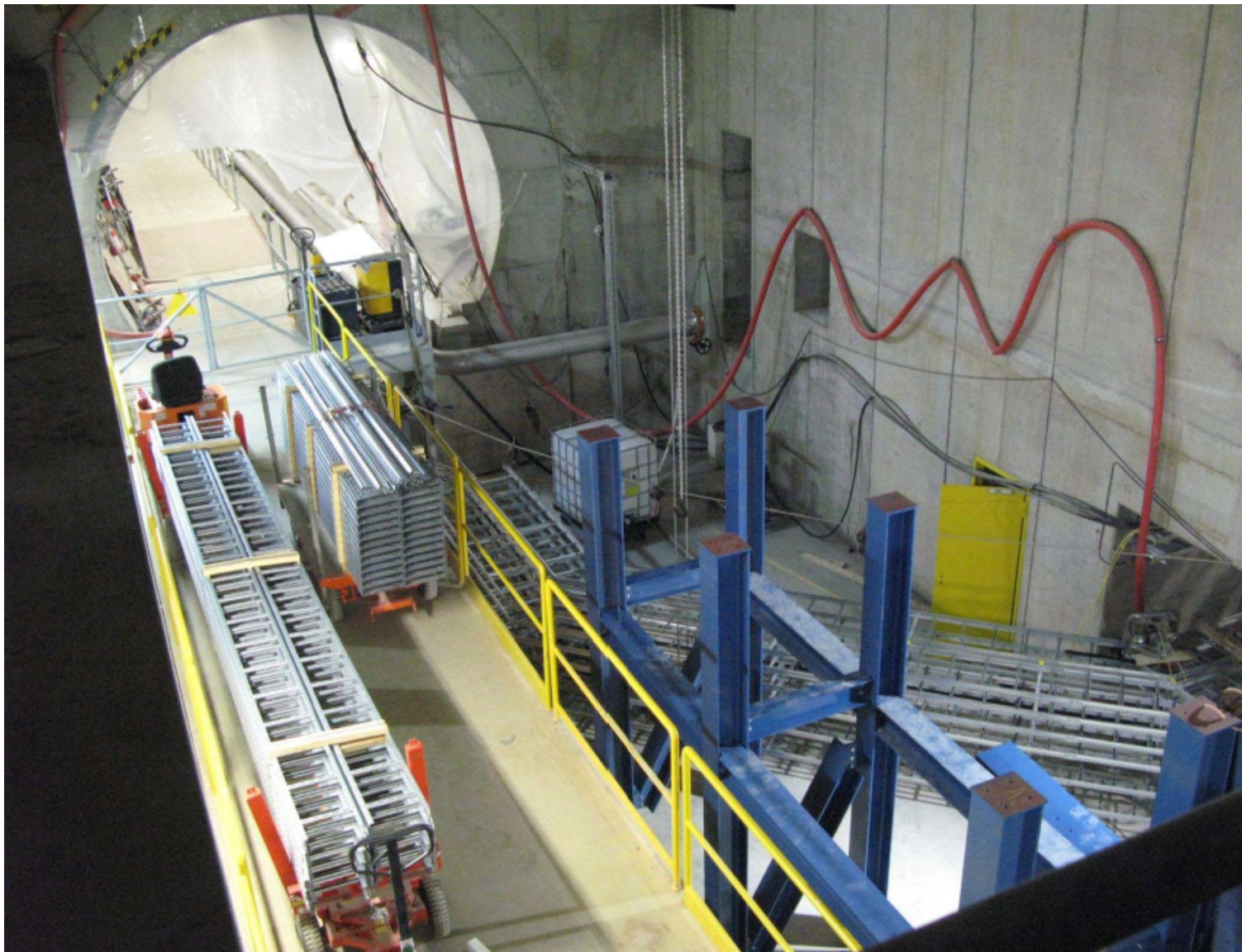
- > Tunneling work completed in June



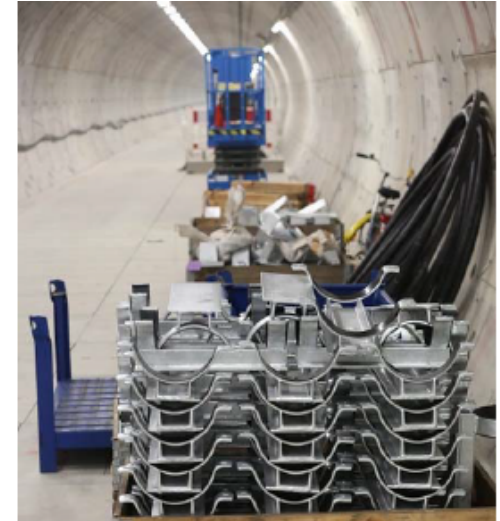
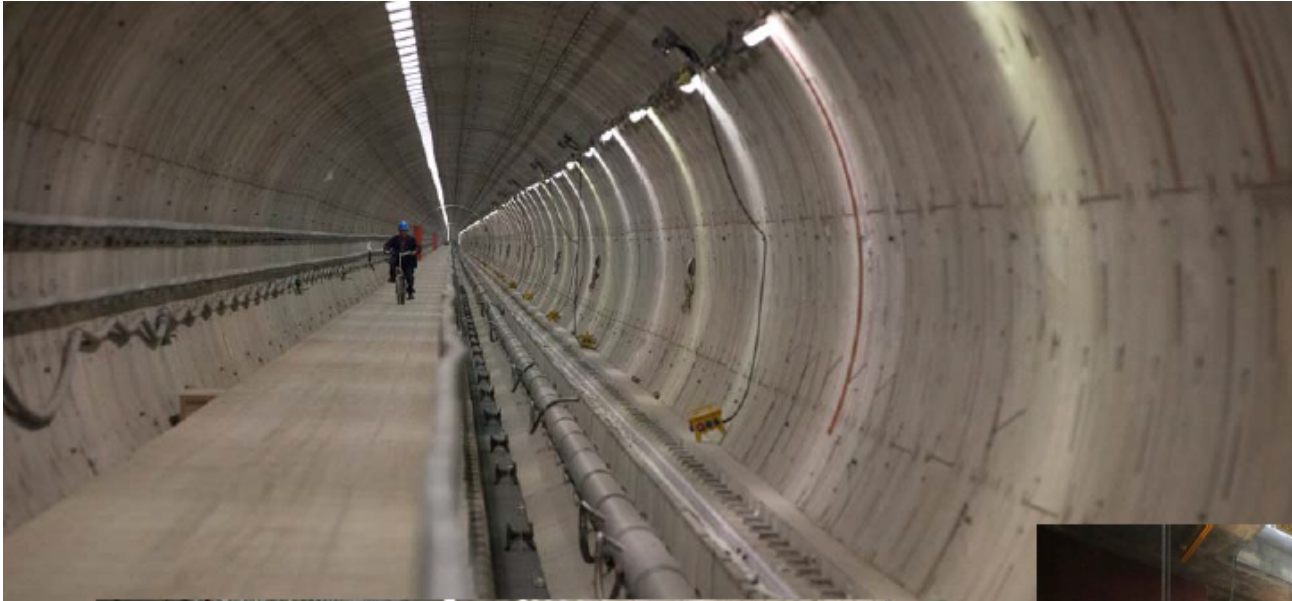
XFEL: Injector Buildings on DESY Site



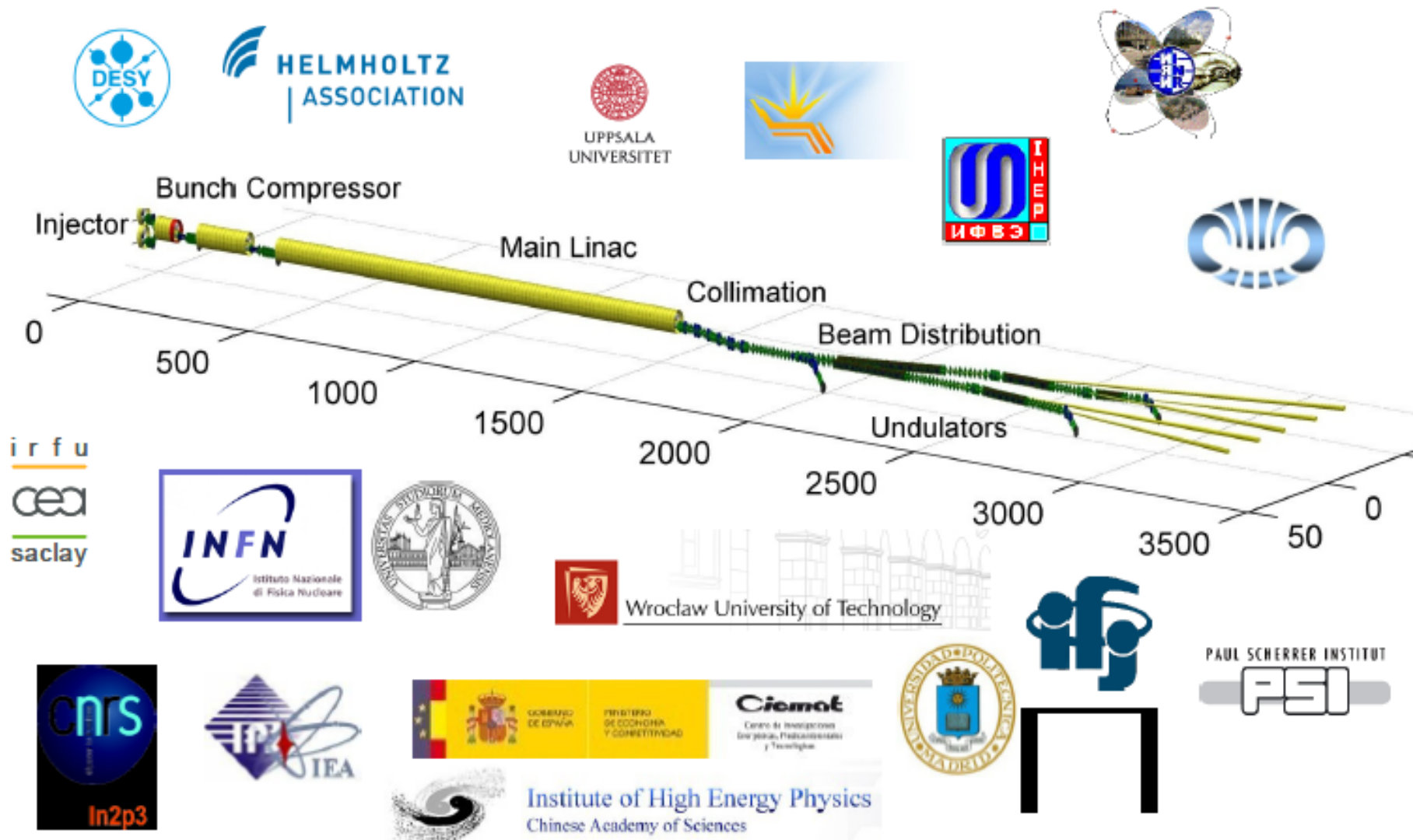
XFEL: Inside the Injector Building



XFEL Tunnel Infrastructure



Status European XFEL Accelerator Complex



XFEL Cavity Production

> Reminder accelerator:

- 17.5 GeV
- \approx 100 modules
- \approx 800 cavities (25 MV/m)
- i.e. approx. 5% of a 500 GeV ILC



> Status:

- approx. 8000 niobium sheets arrived
- > 70% delivered to cavity producers (Zanon & RI) after QC at DESY
- remaining niobium contracted
- cavity production started

XFEL Cavity Production



- > Zanon:
8 pre-series modules

courtesy Zanon



XFEL Cavity Production



courtesy Research Instruments

> **Cavity Production at Research Instruments (RI)**



Module Production: Cold Mass from IHEP Beijing



- 4 already delivered to DESY
- 4 on the ship in direction to Hamburg
- Nov. 2012 review meeting at the company
- From December 2012 delivery with a average rate of 2/Month
- Last delivery expected for January 2014

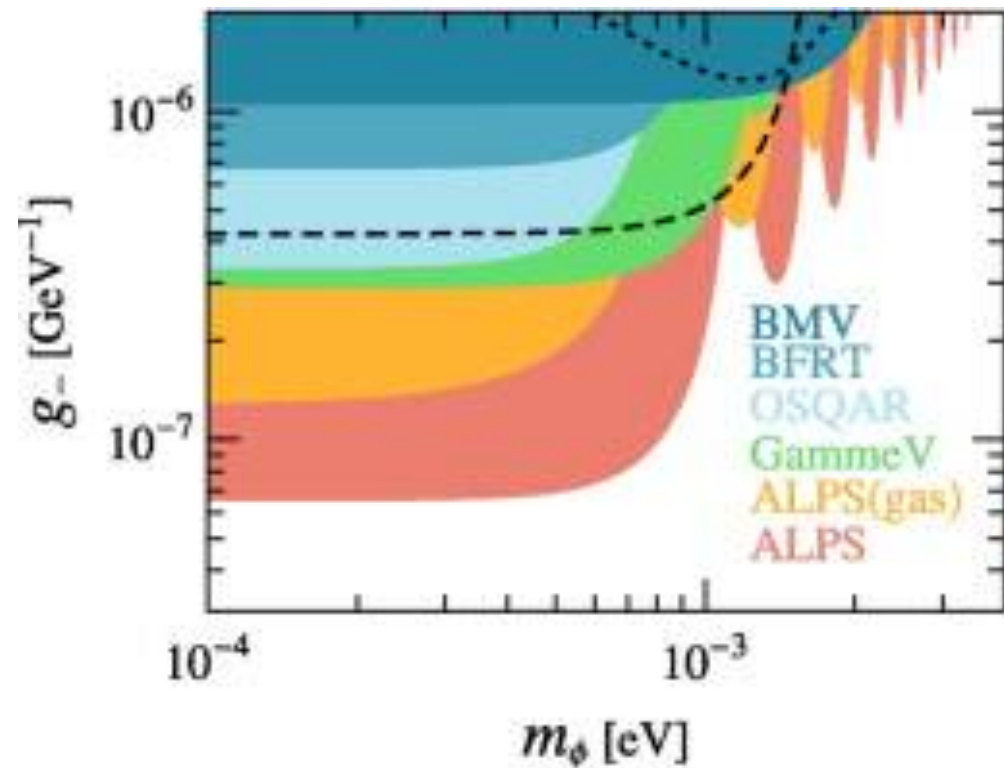
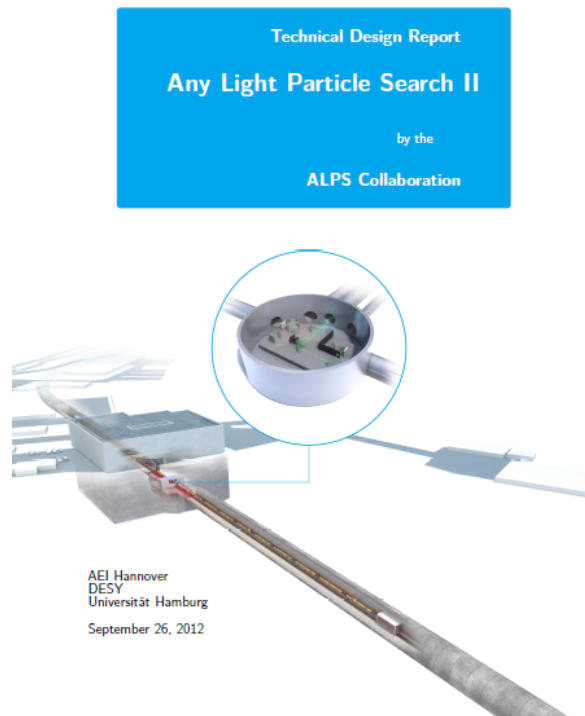
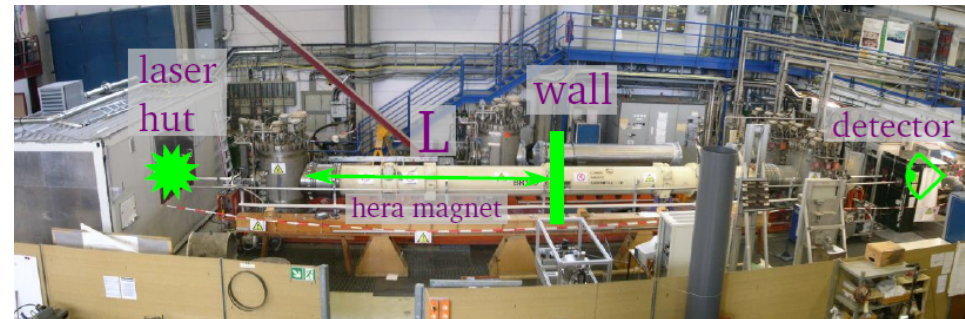


ALPS

> ALPS I experiment

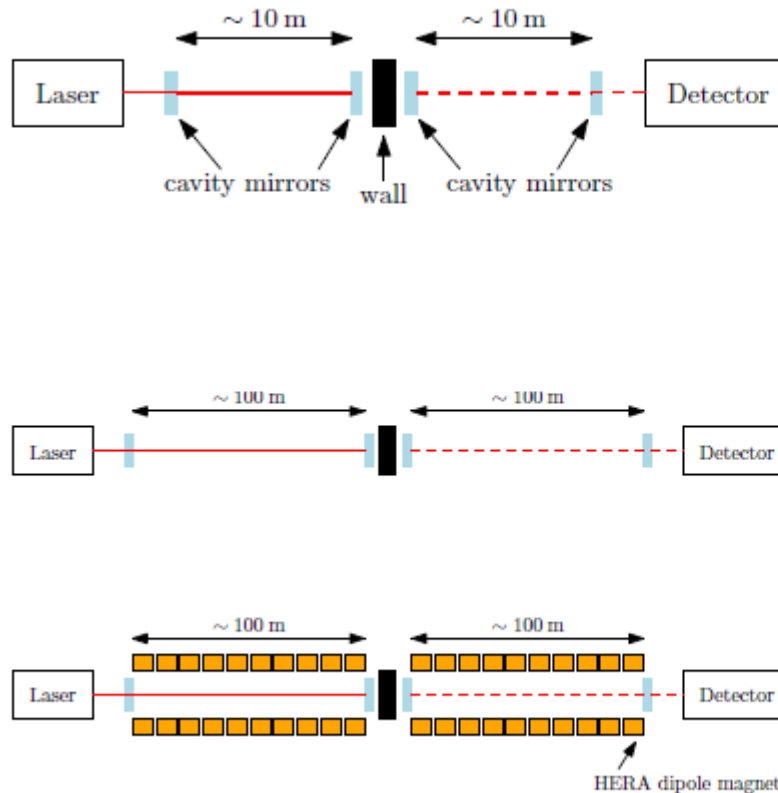
- published results early 2010
- to-date still best experiment of its type

> ALPS II proposal being evaluated



ALPS II

- > Regeneration cavity
- > Transition edge sensor
- > 2 × 10 straightened (!) HERA dipoles



- > ALPS-IIa until 2014 (without magnets) viability of optics & detector at 10m+10m setup
- > ALPS-IIb until 2015 (without magnets) viability of optics & detector with enhanced length 100m+100m setup
- > ALPS-IIc 2017 (with magnets) ALP measurements

OLYMPUS Experiment at DORIS

> Measurement of elastic cross section ratio e^+p vs e^-p

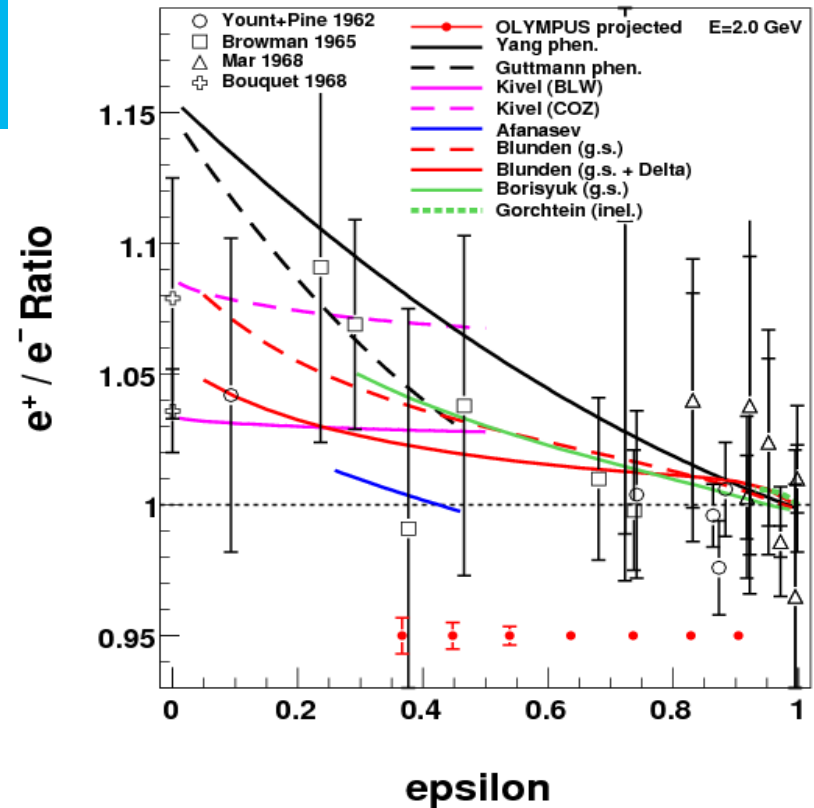
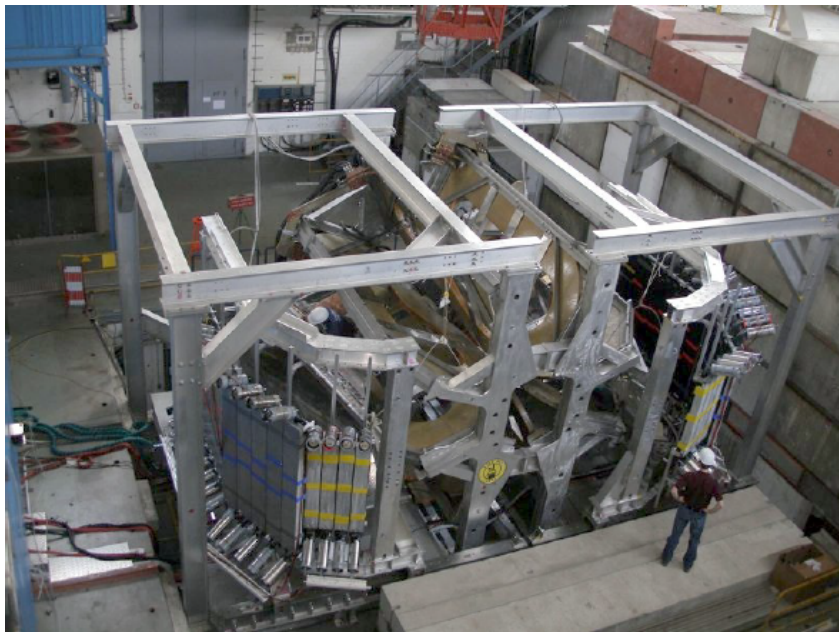
> Use BLAST detector (MIT)

Schedule:

> 2010 set-up experiment at DESY

> 2011 commissioning

> 2012 data taking (3 months)



Arizona State University, USA
 DESY, Hamburg, Germany
 Hampton University, USA
 INFN, Bari, Italy
 INFN, Ferrara, Italy
 INFN, Rome, Italy
 Massachusetts Institute of Technology, USA
 St. Petersburg Nuclear Physics Institute, Russia
 Universität Bonn, Germany
 University of Colorado, USA
 Universität Erlangen-Nürnberg, Germany
 University of Glasgow, United Kingdom
 University of Kentucky, USA
 Universität Mainz, Germany
 University of New Hampshire, USA
 Yerevan Physics Institute, Armenia



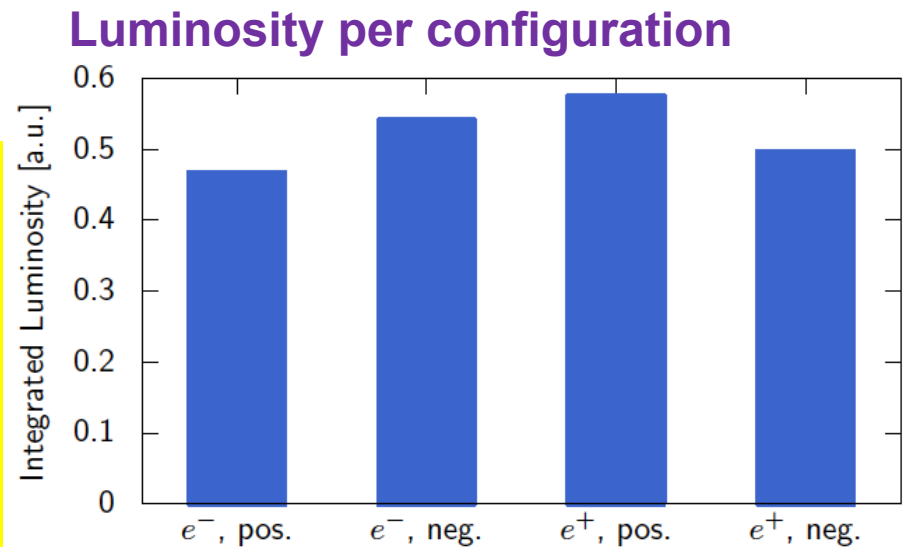
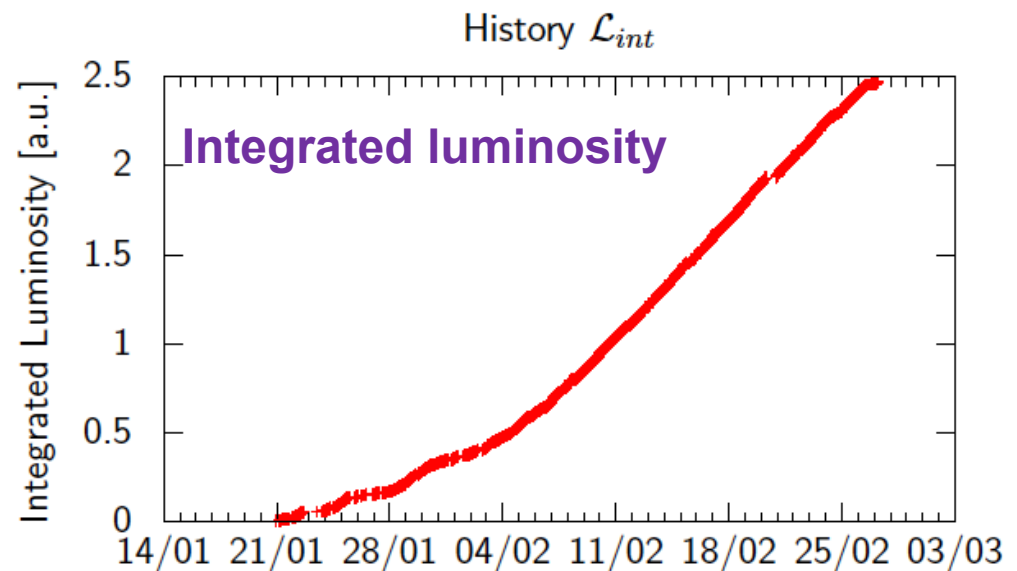
First OLYMPUS Run February 2012

- > 1 billion triggers collected
- > 4 million elastic events
- > DAQ active 74% (mainly DORIS refill)
- > Fill/run 12 min
injection 2-3 min
- > DAQ dead time 25%
- > Very stable operation

OLYMPUS data taking runs

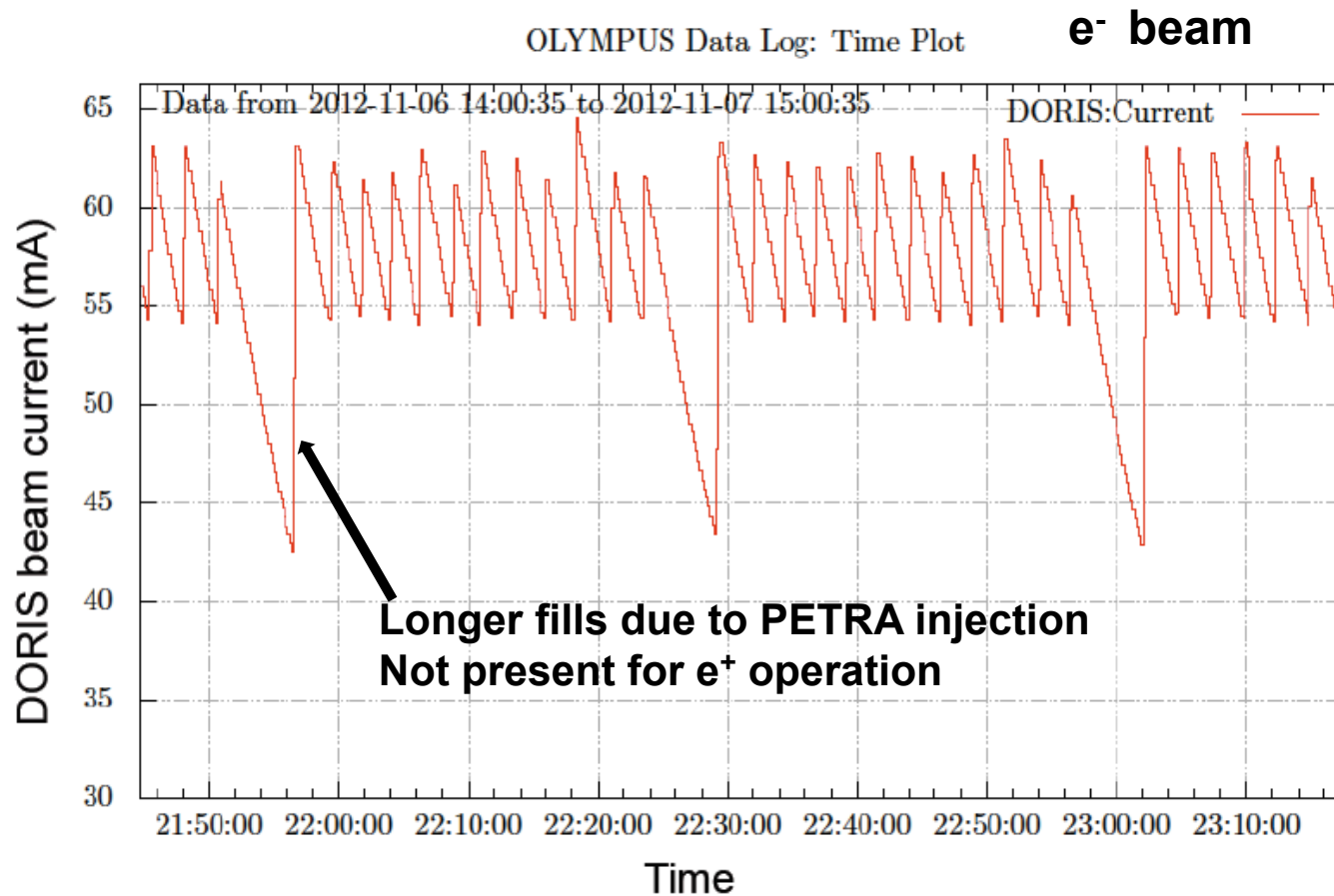
- > Jan. – Feb. 2012 1st run
- > Oct. – Dec. 2012 2nd run

DORIS will be shut down end of 2012



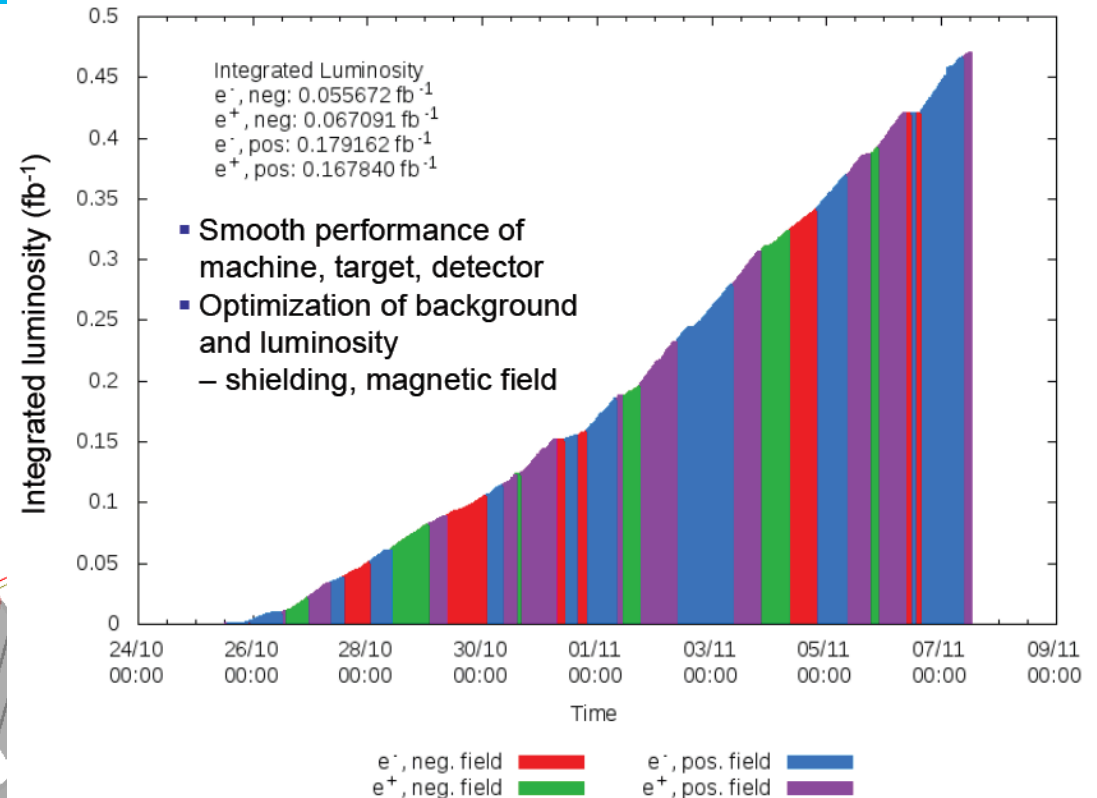
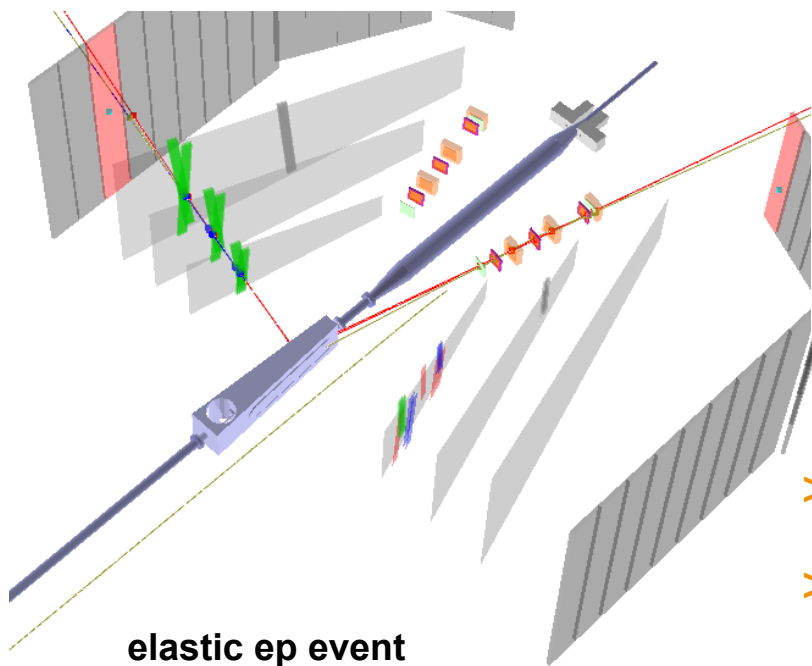
OLYMPUS Data Taking

- > Final data taking period started end October
- > Many improvements to machine & detector
 - Peaceful coexistence between PETRA and OLYMPUS



OLYMPUS Data Taking

- > **Smooth running**
 - **Some background problems**
- > **On track to reach target luminosity**



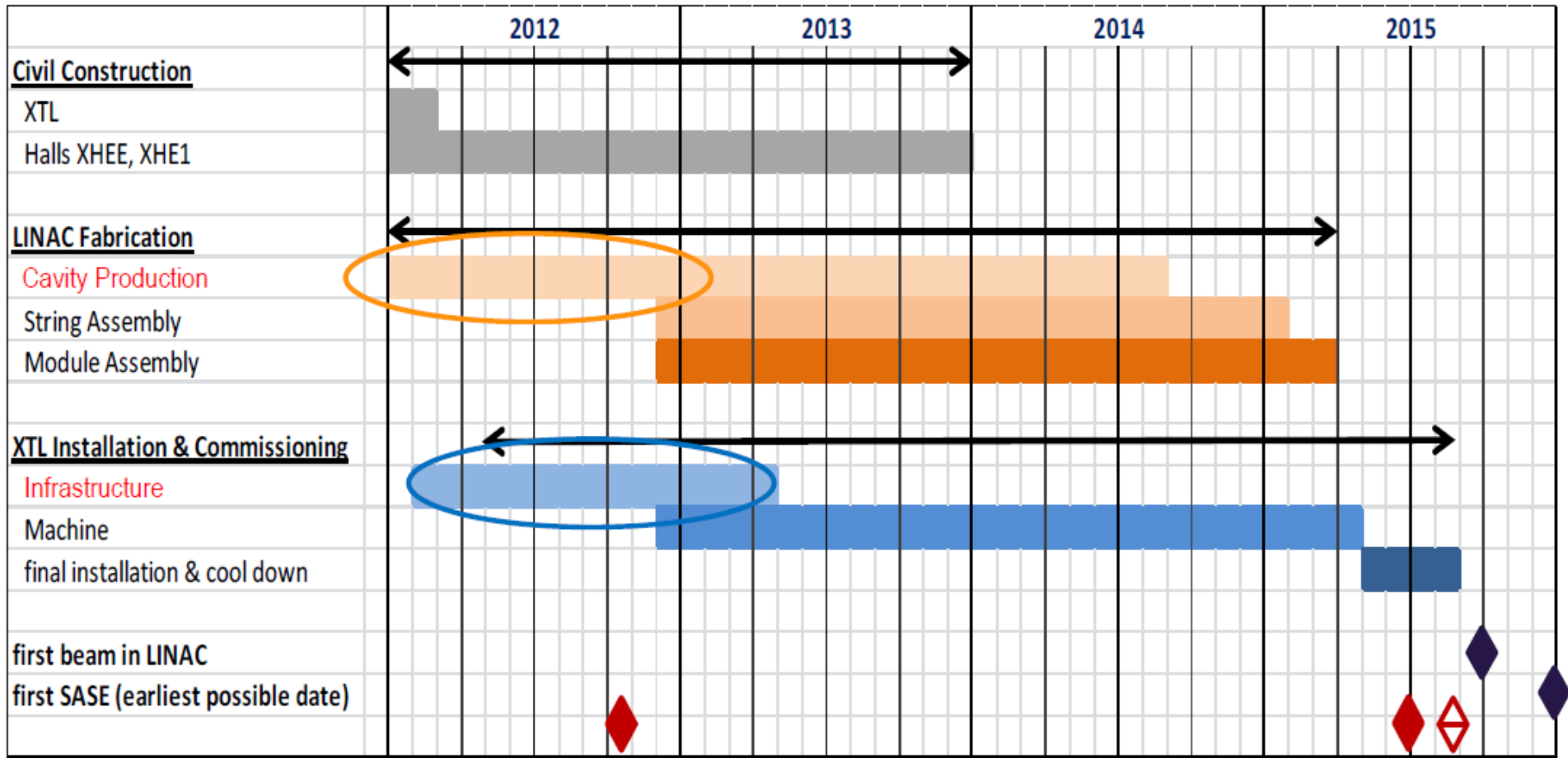
- > **DORIS will be shut down Jan. 2nd 2013**
- > **Event to celebrate all DORIS achievements on May 15, 2013**



> Backup



XFEL Schedule



Helmholtz Association

> Restructuring of research area for next funding period (2015 ff)

Structure of Matter 4 programmes:

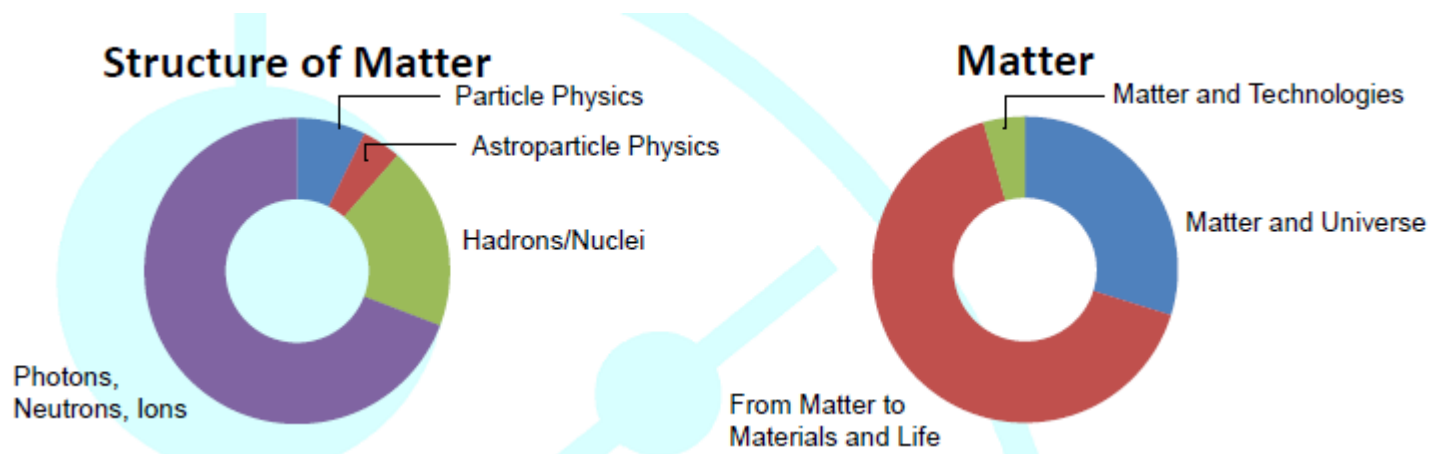
- Particle Physics
- Astroparticle Physics
- Hadron and Nuclei
- Photon, Nuclei, Ions



Matter 3 programmes:

- Matter and Universe
- From Matter to Materials and Life
- new** ▪ Matter and Technology
(Accelerator, Detector, Computing)

Portfolio topics accelerator, detector and computing approved



DESY Long-term Strategy in Particle Physics



- > **Accelerators** + support through strong theory group
 - > **Detectors** + computing infrastructure
 - > **Physics** + testbeam & other infrastructures
-
- > **In addition: Explore potential use of DESY infrastructure for particle physics**
 - **ALPS & OLYMPUS are recent examples**
 - **High intensity electron beams (FLASH, XFEL)**
 - **Use of HERA tunnel?**