

# News from DESY.

**Joachim Mnich**

Plenary ECFA  
Grenoble, July 2011



Beschleuniger | Forschung mit Photonen | Teilchenphysik

Deutsches Elektronen-Synchrotron  
Ein Forschungszentrum der Helmholtz-Gemeinschaft



- > **Brian Foster** accepted Alexander-von-Humboldt Professorship
- > **Topics:**
  - **Advanced accelerator technologies**
  - **Linear Collider (ILC, Synergy with XFEL)**
  - **HERA Analyse (→ LHC)**
- > **Start June 1st, 2011**



# Status European XFEL

- > Injector building on DESY site
- > Arrival of tunneling machine beginning of August
  - Completion of accelerator tunnel

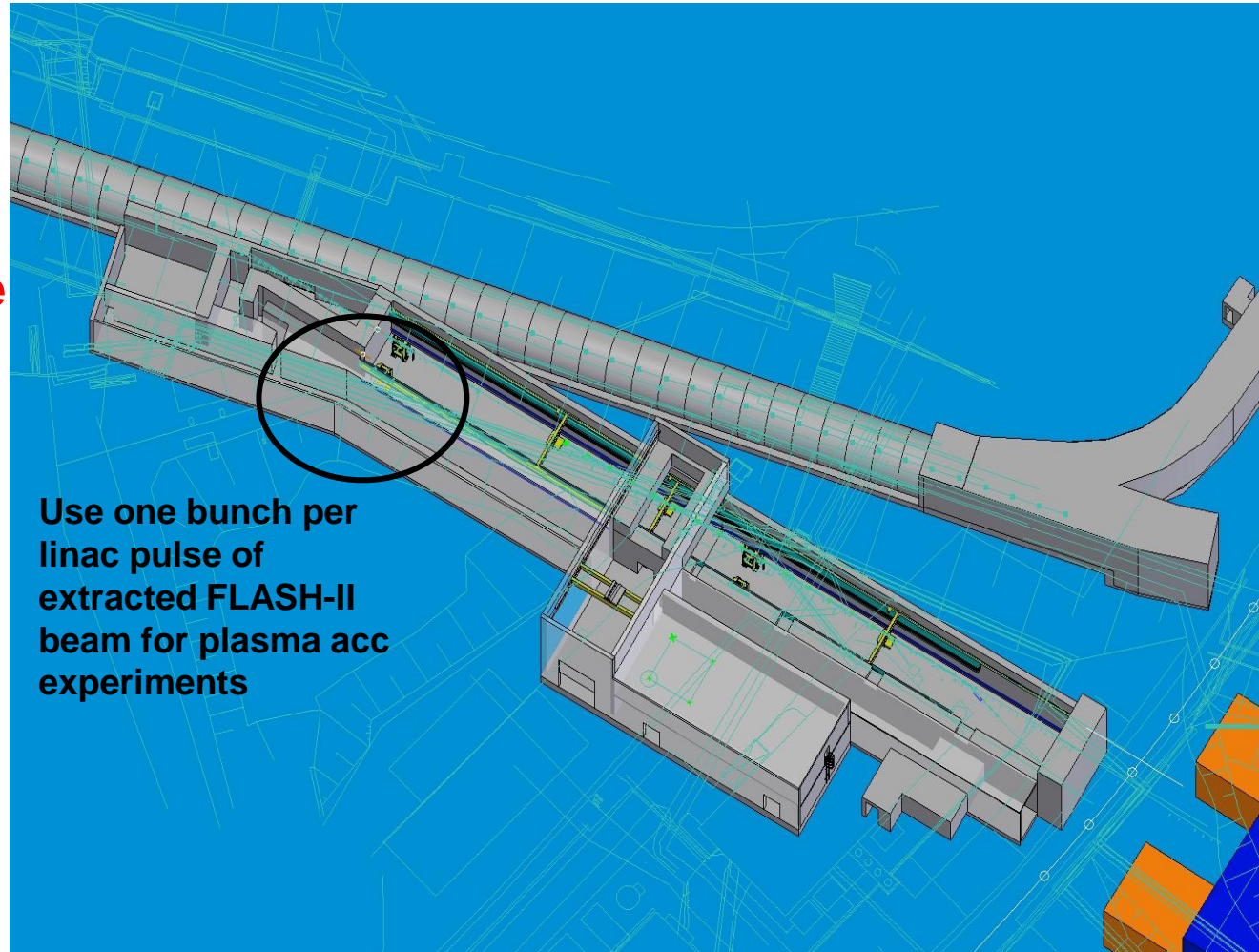


- > Test stands for accelerator modules under construction



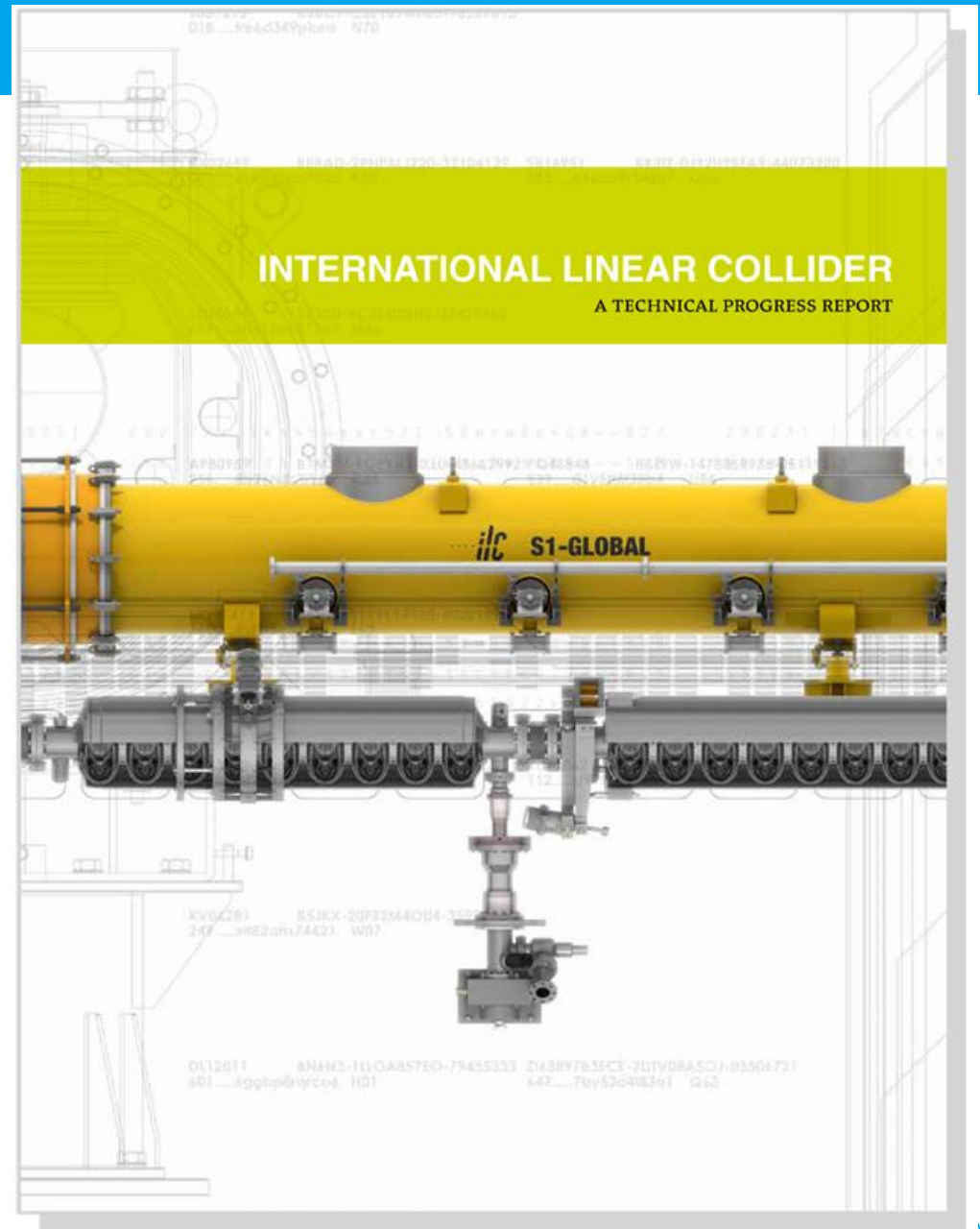
# FLASH II

- > Project approved
- > Civil engineering started
- > Integration of future facility for PWA Experiments



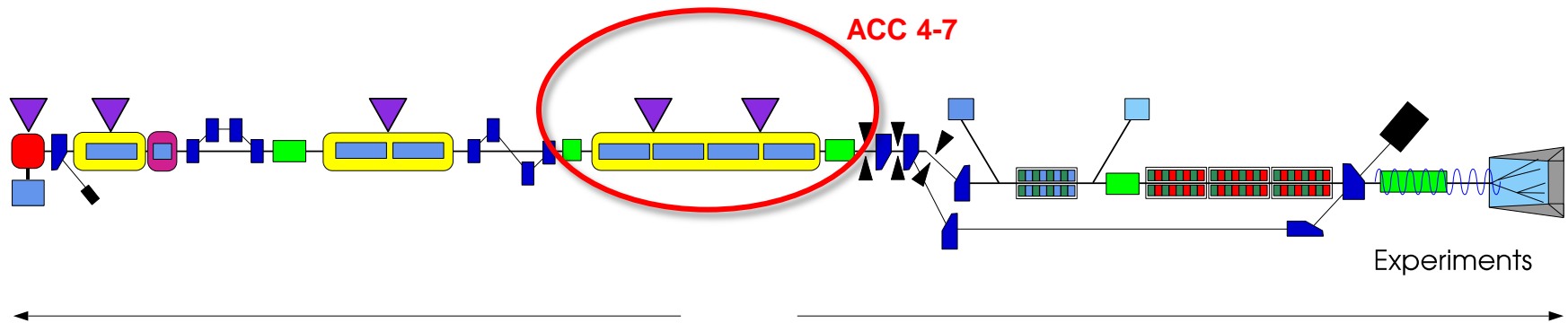
# Linear Collider



- > ILC Interim Report
- > Important milestone on the way to the TDR next year

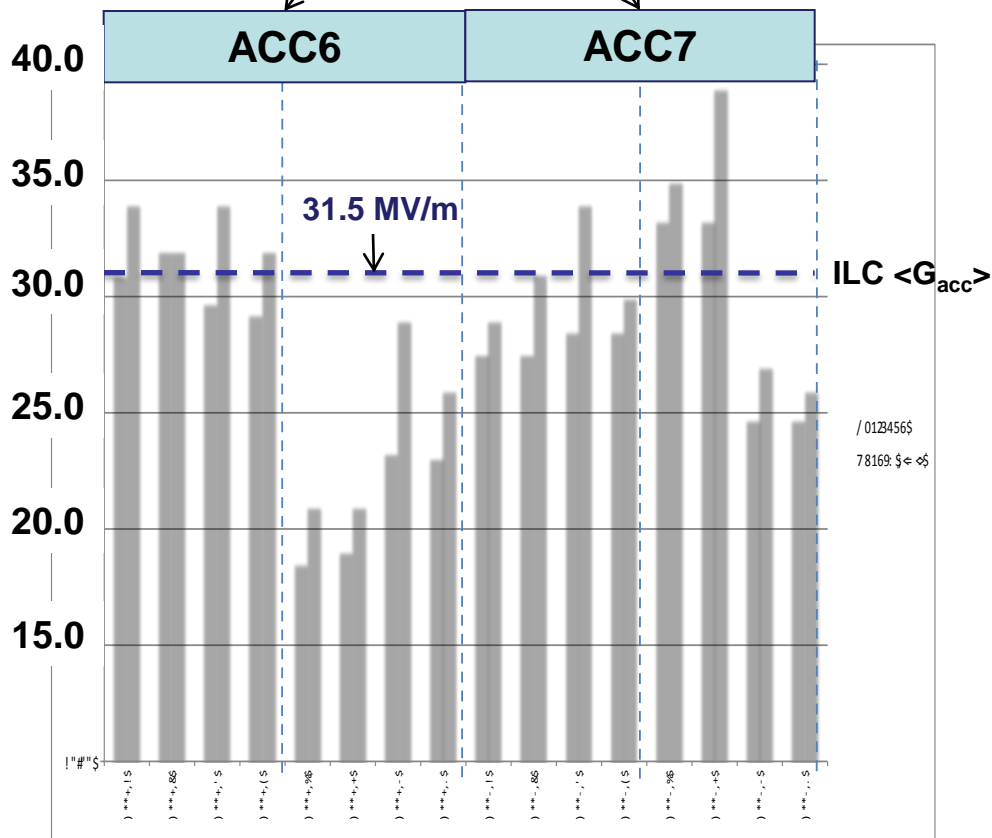
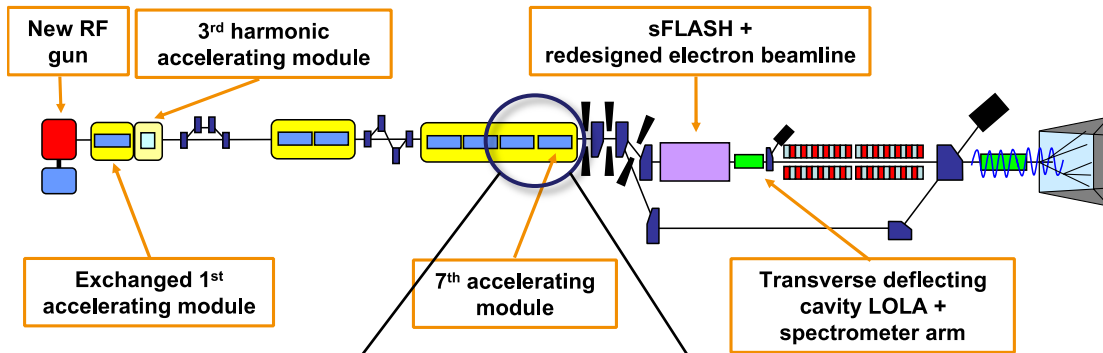


# 9mA Experiments at TTF2/FLASH

## TTF2/FLASH: unique worldwide facility



				FLASH design	FLASH experiment
Bunch charge	nC	1	3.2	1	3
# bunches		3250*	2625	7200*	2400
Pulse length	$\mu\text{s}$	650	970	800	800
Current	mA	5	9	9	9



## > Operation with Gradient Spread

- From single RF source
- Now ILC baseline ( $\pm 20\%$ ) [XFEL and FLASH also]

## > Specifically: achieving constant gradients for each individual cavity during beam pulse

- to within few percent
- close to gradient limits



> Hybrid design with components from all three regions

- KEK: 4 cavities in 1 cryostat
  - DESY: 2 cavities
  - FNAL: 2 cavities
- } INFN / ZANON cryostat

> Comprehensive test programme

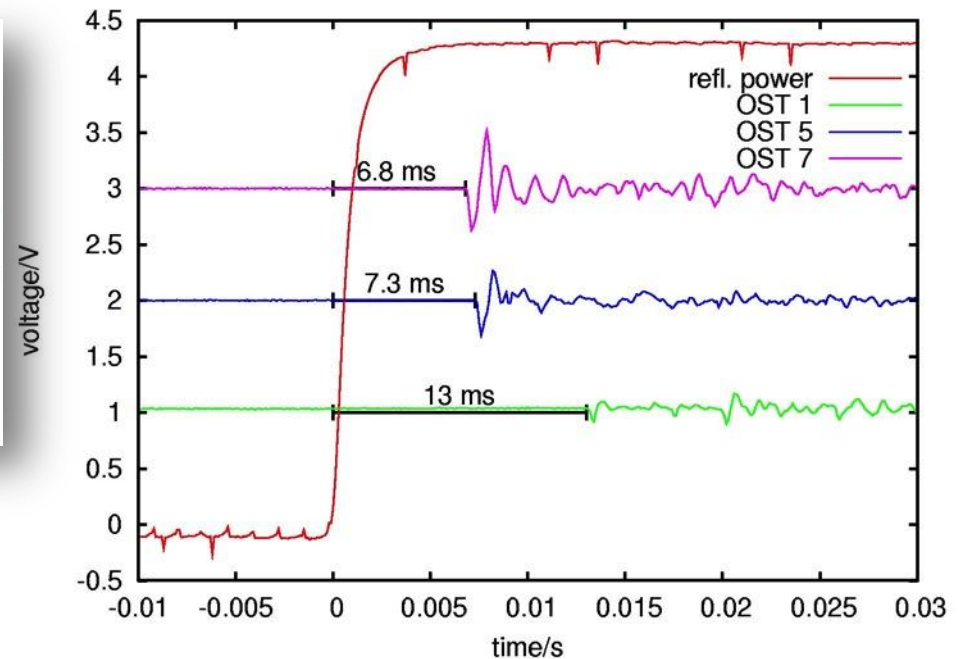
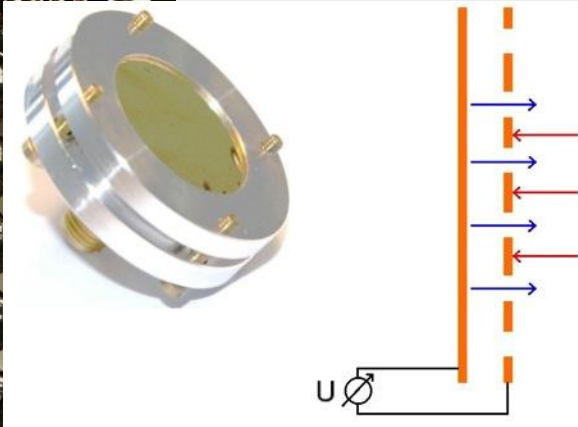
- International team
- Performance test of different component designs
  - 2 types of HP coupler
  - 3 types of cavity tuner

> Programme now complete

- Results being analysed and consolidated
- Module to be disassembled end of the year



# ILC-HiGrade: Second-Sound Diagnostics



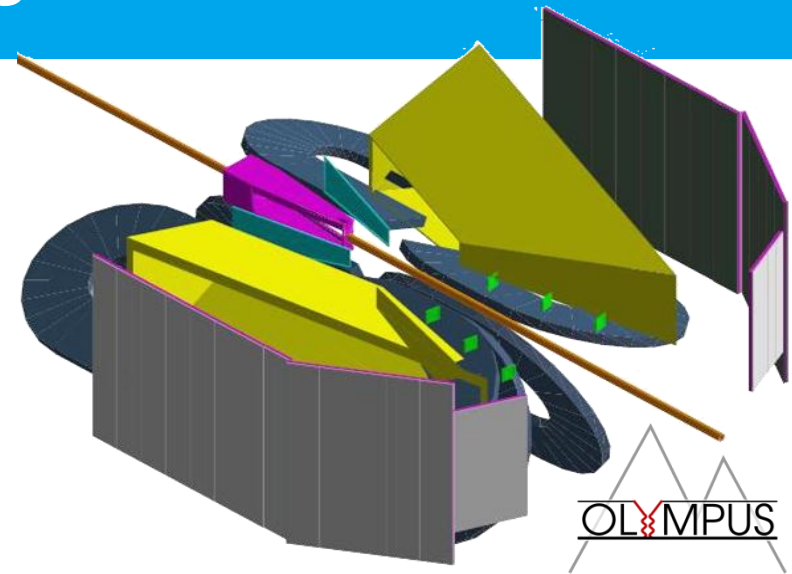
- > **Development of routine second-sound diagnostics for XFEL vertical test**
  - Location (via triangulation) of quench
  - originally developed at Cornell
- > **QC of XFEL cavity production**
- > **Link to T-mapping and optical inspection**

# 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

## > Test installation target chamber Jan 2011



## > July 2011 OLYMPUS in DORIS



## > Schedule

- Test & installation of components until mid July
- **Roll into DORIS ring 15.7.**
- Commissioning (parasitic) until end 2011
- Data runs 4 weeks early 2012 plus 8 weeks end of 2012

# Backup



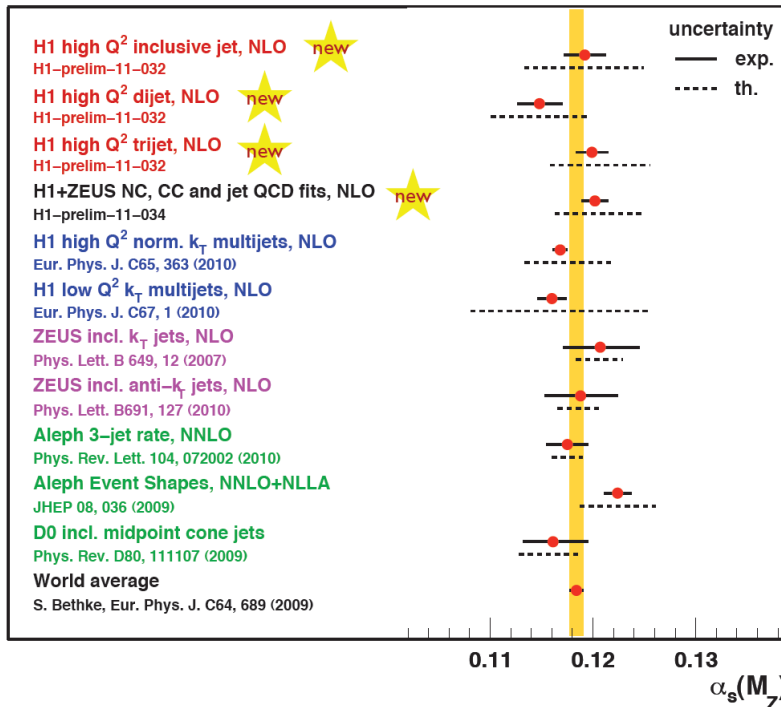


# Analysis of HERA Data: Examples

> Completion of analyses and combination of experiments according to plans

> More than 40 papers published in 2010

## Measurement of $\alpha_s$



## b-quarks content of the proton

### ZEUS

