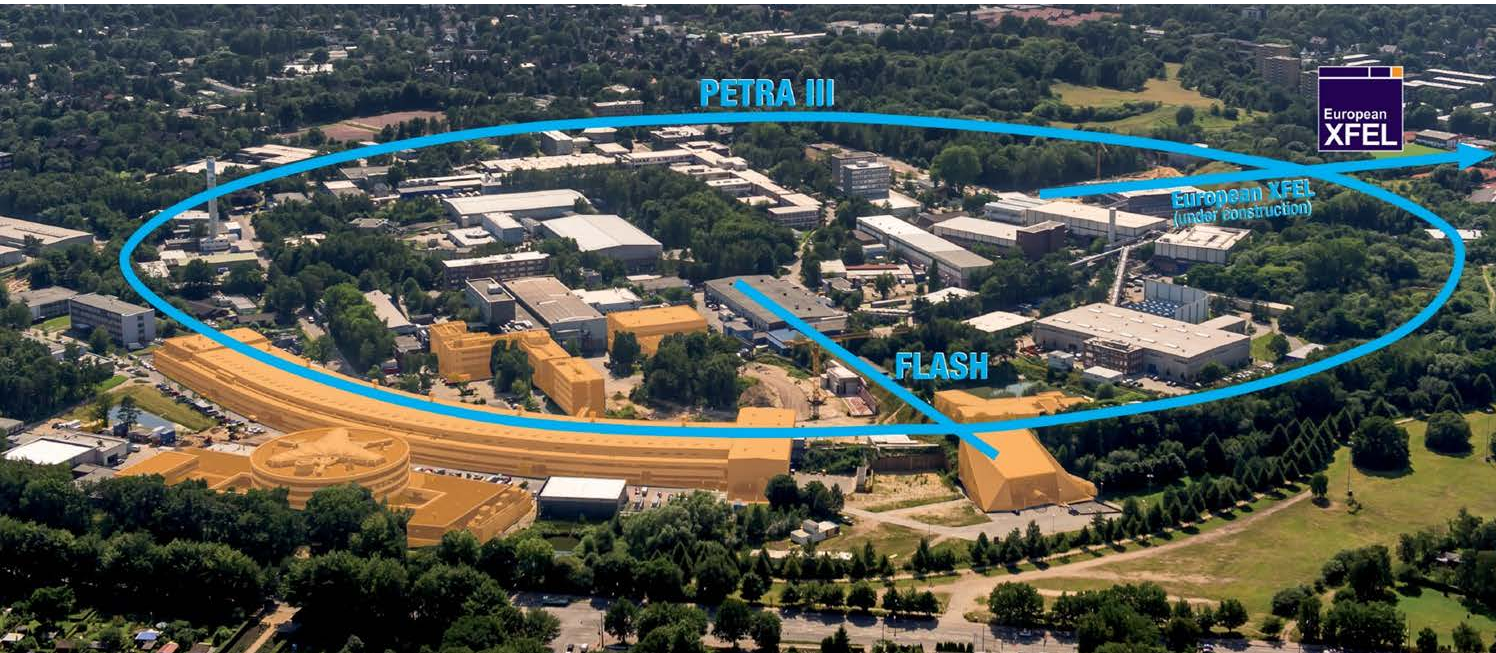


# DESY Photon Science Facility Overview

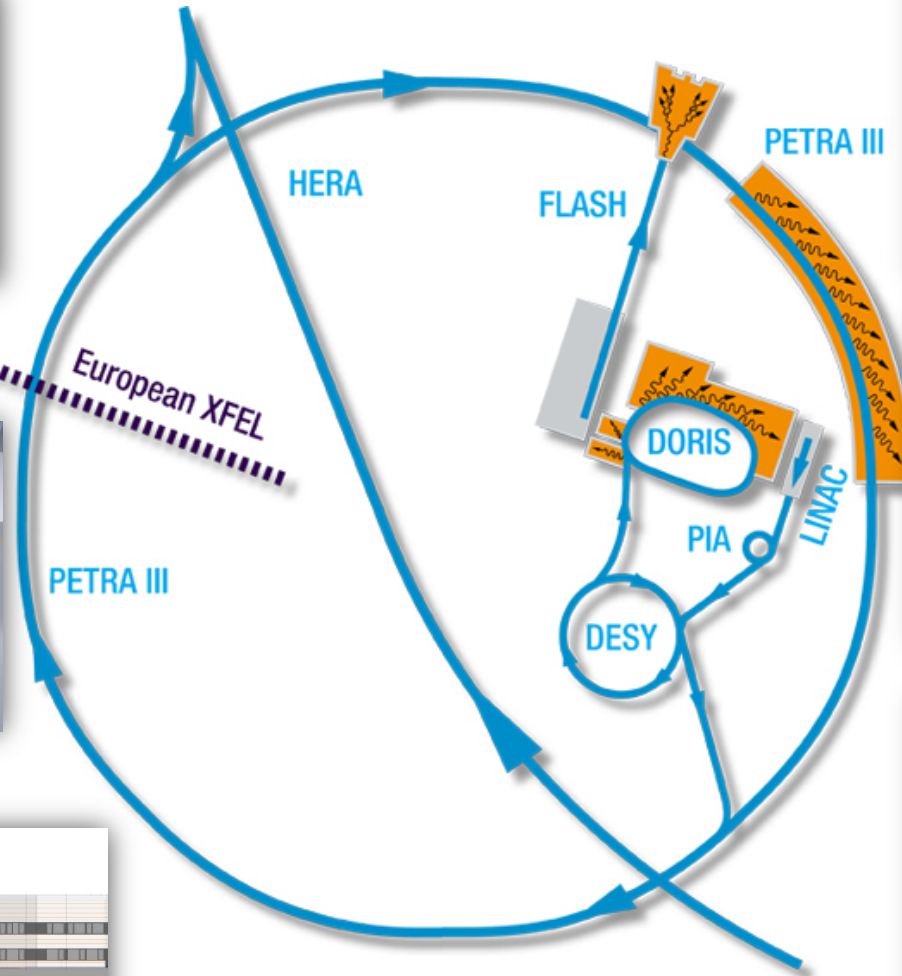
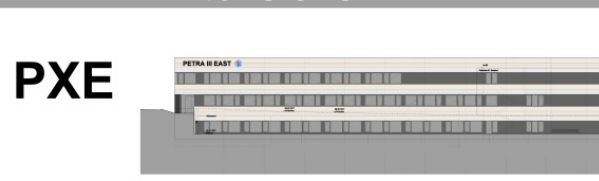
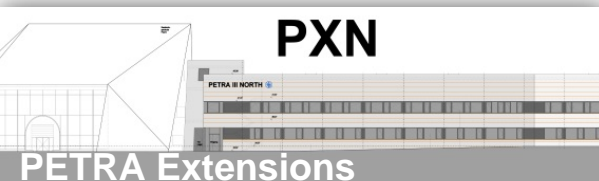
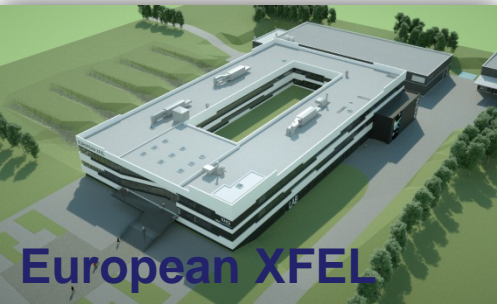
USER OFFICE workshop – Three-Way Meeting



Daniela Unger

DESY Photon Science - Facility Overview  
Three-Way Meeting  
Argonne, July 31, 2013

# Photon Facilities at DESY



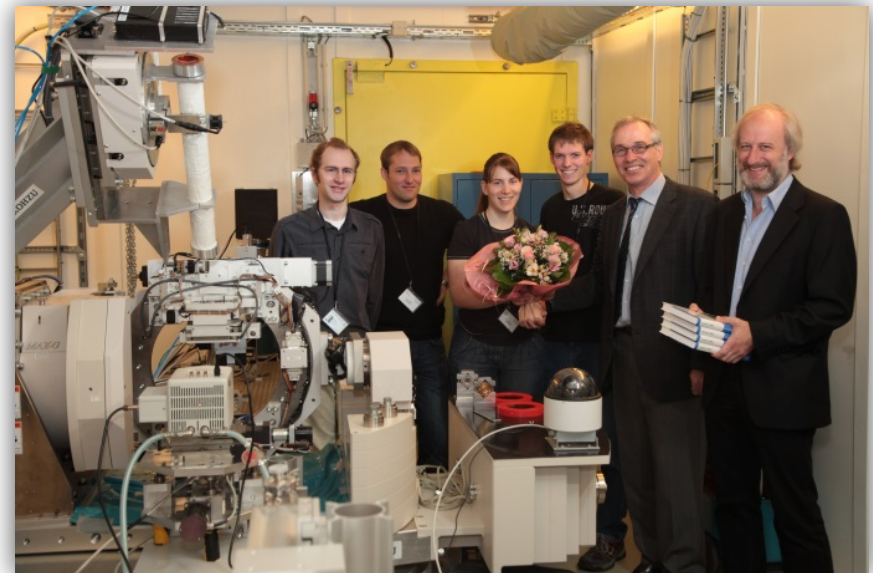
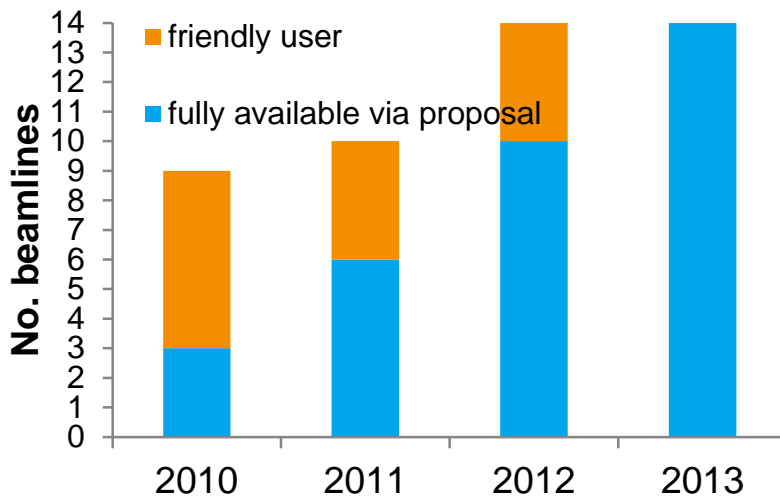
# PETRA III - History

- > PETRA accelerator originally served for particle physics experiments, then as a pre-accelerator for the large HERA facility
- > After the shutdown of HERA in 2007, the 2.3-kilometre-long ring accelerator was refurbished and nearly 300 m completely rebuilt including a new experimental hall



# PETRA III - History

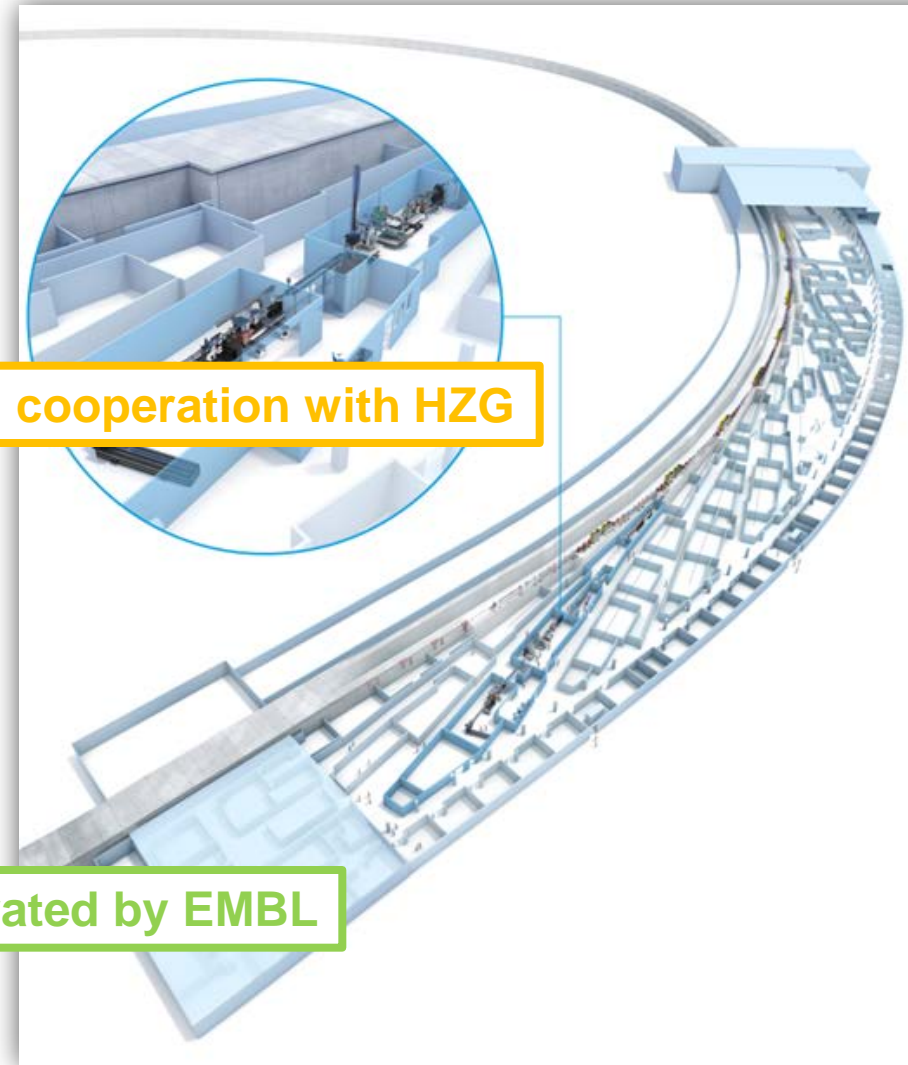
- > PETRA III took up operation in 2009
  - April 2009: first stable beam in the ring in April 2009
  - 12 Oct 2009: first users experiment at beamline P08.
  - 3 Sep 2010: first official user access,
  - regular operation started with 3 beamlines
  - 14 beamlines operational since 2012



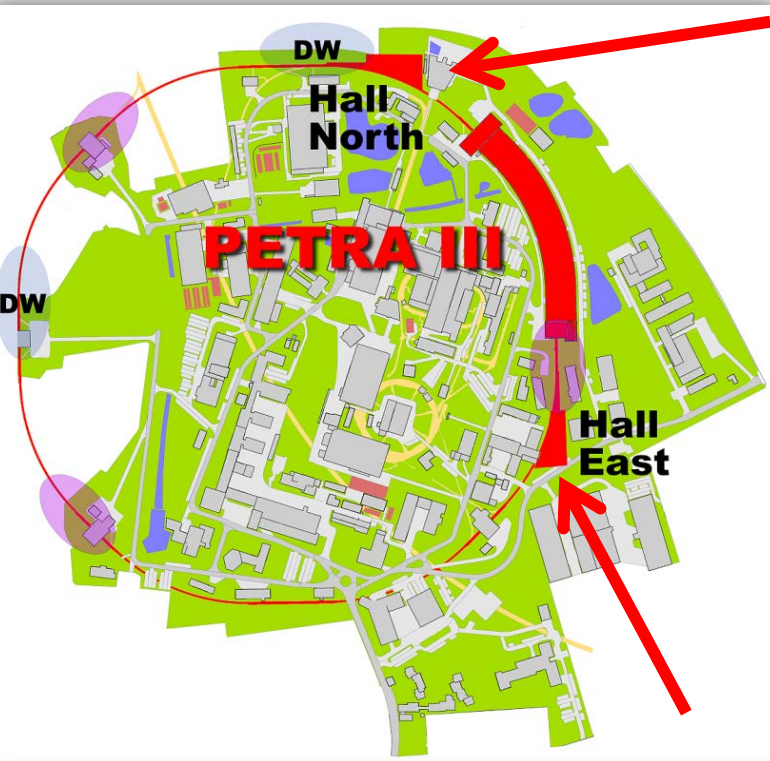
First Official Users (Helmholtz Centre for Heavy Ion Research, Darmstadt)

# Beamlines: PETRA III

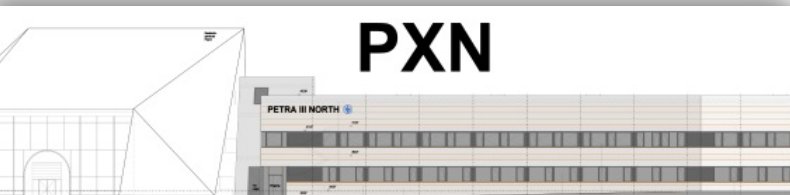
- P01 High Resolution Dynamics Beamline
- P02 Hard X-Ray Diffraction Beamline
- P03 MINAXS
- P04 XUV Beamline
- P05 Imaging Beamline
- P06 Hard X-Ray Micro Probe
- P07 High Energy Materials Science
- P08 High Res Diffraction
- P09 Resonant Scattering and Diffraction
- P10 Coherence Applications
- P11 Bio-Imaging and Diffraction
- P12 BioSAXS
- P13 Macromolecular Crystallography I
- P14 Macromolecular Crystallography II



# UPGRADE: PETRA III extension

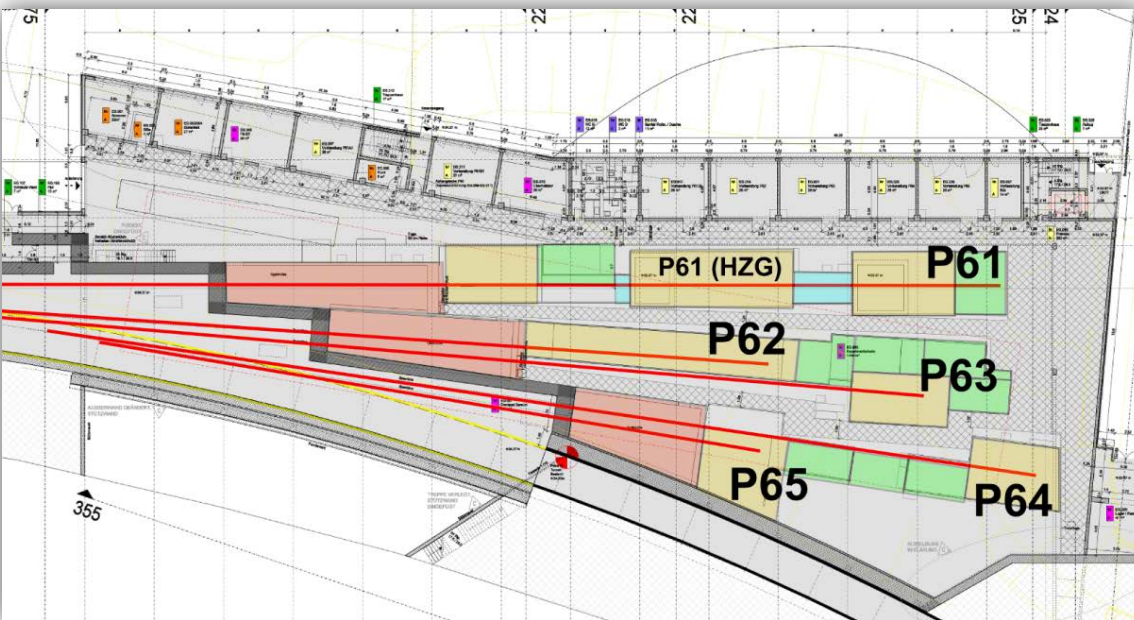


- > After closure of DORIS III (36 beamlines) additional capacity is urgently needed
- > Extension of PETRA III in progress
  - two new experimental halls (North and East)
  - construction starts January, 2014
  - due to machine shut down and re-commissioning no regular PETRA III user operation in 2014



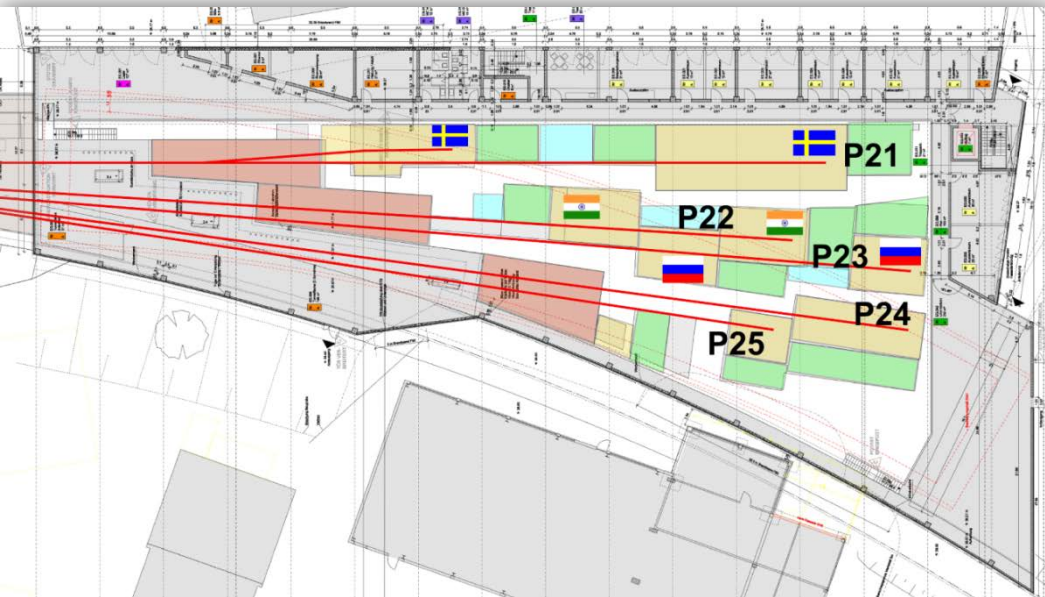
# PETRA III Extension – Hall North Beamlines

- P61.1 - High-Energy Materials Science Beamline (HZG)
- P61.2 - High Pressure Extreme Conditions in a Large Volume Press (DESY) (2016)
- P62 - Small Angle X-ray Scattering Beamline (2016)
- *P63 - X-ray Micro-Fluorescence Spectroscopy Beamline (tentative – no funding)*
- **P64 - Time-Resolved- & Bio- X-ray Absorption Spectroscopy Beamline (Summer 2015)**
- **P65 - X-ray Absorption Spectroscopy Beamline (Summer 2015)**



# PETRA III Extension – Hall East Beamlines

- P21.1 – **Swedish** High Energy Side Station (Spring 2016)
- P21.2 – **Swedish** High-Energy Materials Science Beamline (Fall 2015)
- P22 - **Indian/German** Nano-Spectroscopy Beamline
- P23 - **Russian/German** Nano-Diffraction Beamline (Fall 2015)
- P24 - Chemical Crystallography Beamline (Fall 2015)
- *P25 - Education, Training, Testing (not funded yet)*

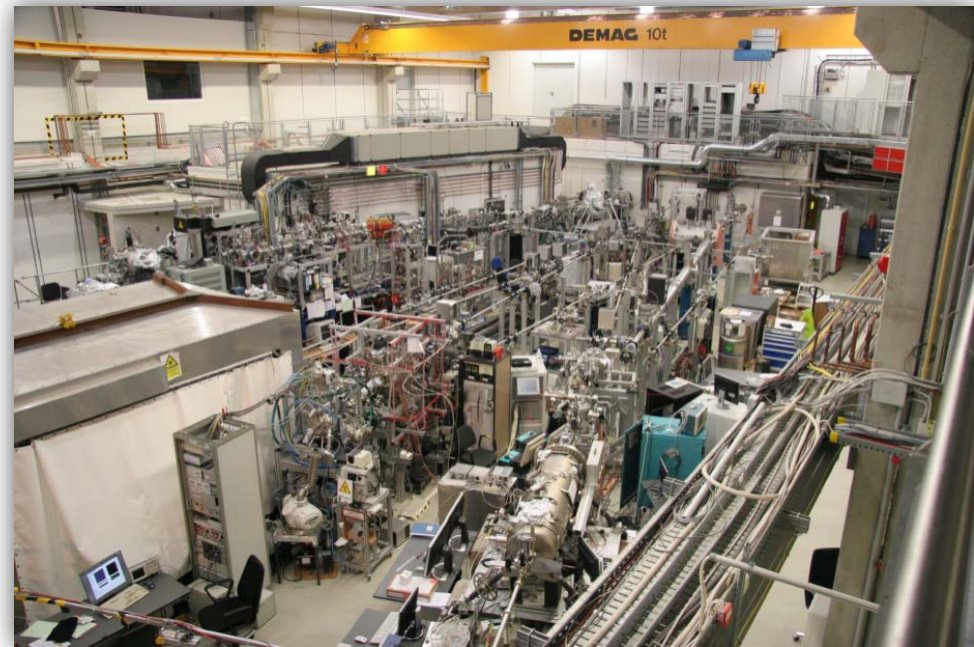


→ 3 beamlines built within international cooperations → special access contingents

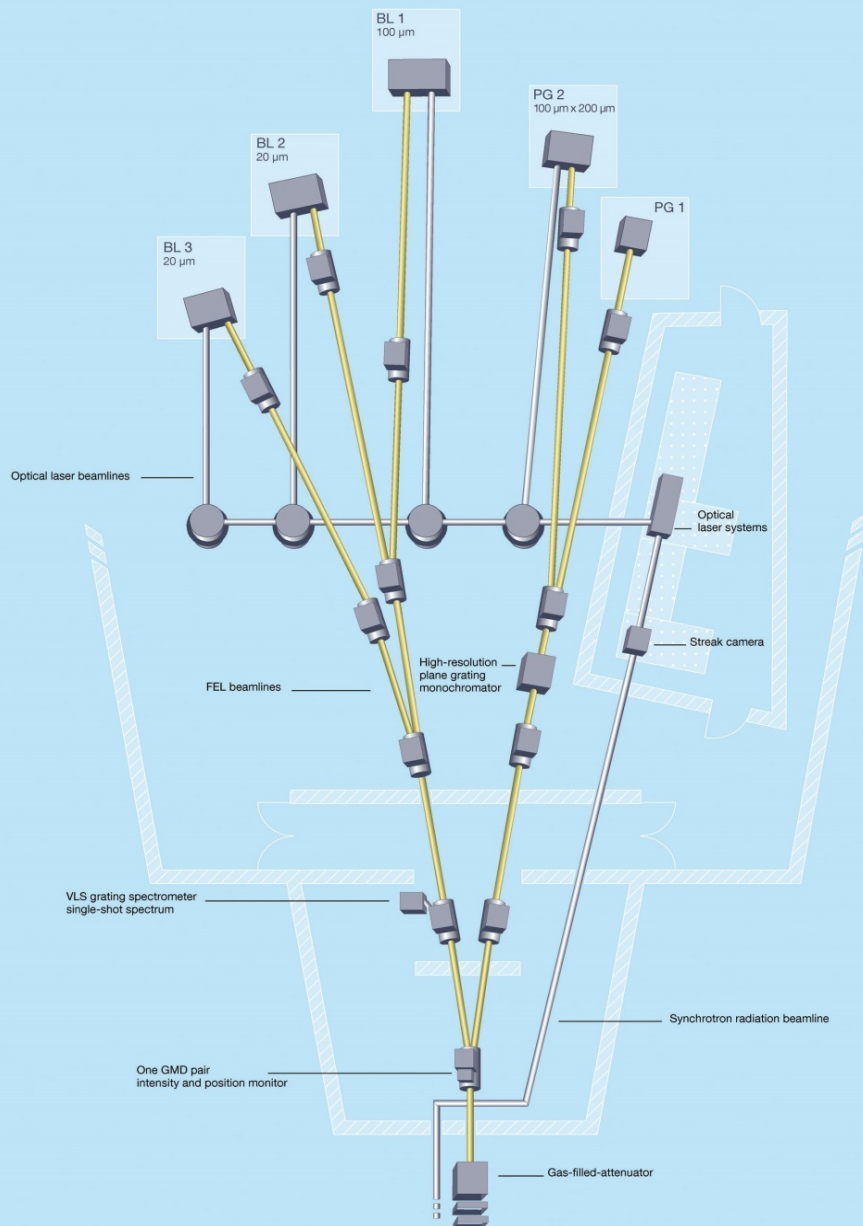


# FLASH- Free-Electron LASer in Hamburg

- > User access since 2005
- > first Free-Electron Laser with a superconducting linear accelerator
- > presently the only FEL user facility in the ultraviolet and soft X-ray regime

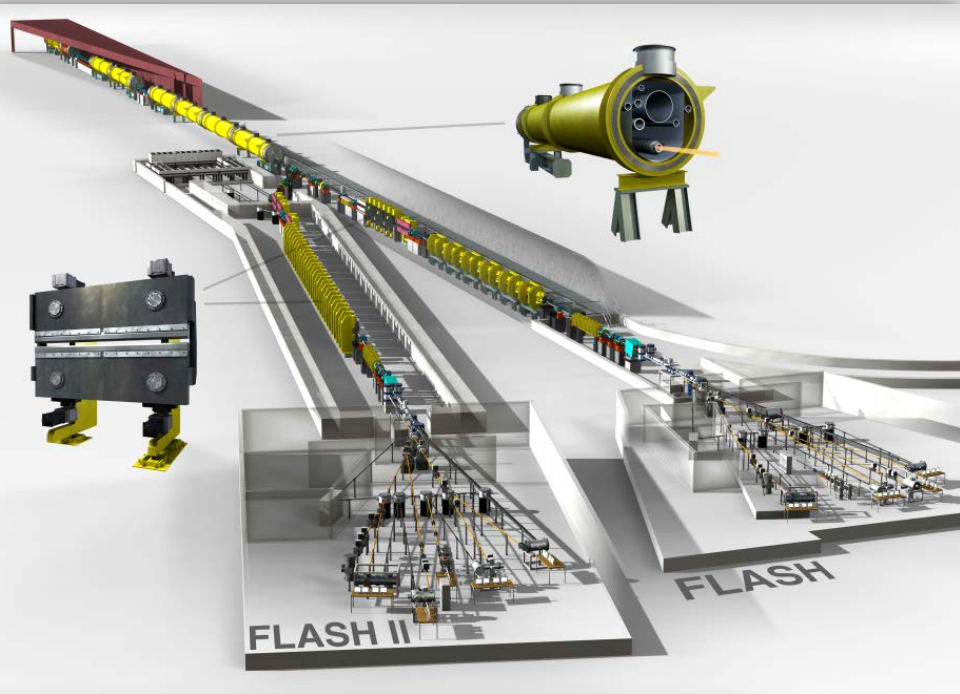


# FLASH - Beamlines



- > 5 beamlines operational (two experiments in parallel), PG 1 with permanent end station
- > optical laser system is routinely provided for pump-probe experiments at all beamlines
- > At present: Shut down until Oct 2013 for construction of FLASH II extension

# FLASH II - extension



- > FLASH II tunnel construction started in 2011, tunnel and hall are being furnished at the moment
- > new experimental hall for approximately six new photon beamlines & experimental stations
- > double the user capacity of FLASH
- > FLASH and FLASH II can be operated in parallel, with a largely independent adjustment of the wavelengths
- > user experiments are expected to start in 2014



# European X-Ray Free-Electron Laser XFEL



- > 3.4 km long facility from DESY campus to Schenefeld
- > DESY is largest shareholder
- > DESY will also operate the accelerator
- > nanometre-scale structures, fast processes, and extreme states
- > 3D images of viruses and proteins, filming chemical reactions
- > User access from 2015 on





## > Center for Free-Electron Laser Science

- joint enterprise from DESY, the Max Planck Society (MPG), and the University of Hamburg.
- dedicated to the investigation of structural changes of atoms, molecules, condensed, biological, or warm dense matter



## DESY is represented by

- 2 Experimental Research Divisions
  - for *Coherent Imaging* of Henry Chapman including independent research group “Controlled Molecule Imaging” headed by Jochen Küpper
  - for *Ultrafast Optics and X-rays* of Franz X. Kärtner
- CFEL *Theory Division* of Robin Santra



# Research Platforms: DESY NanoLab

## > DESY Nanolaboratory

- The DESY NanoLab is planned as a new on-site user facility
- construction autumn 2013-2015
- providing lab facilities for surface preparation and nanoparticle growth
- advanced nano-characterization & nano-structuring
- access will be provided in combination with approved beamtimes at PETRA III and FLASH

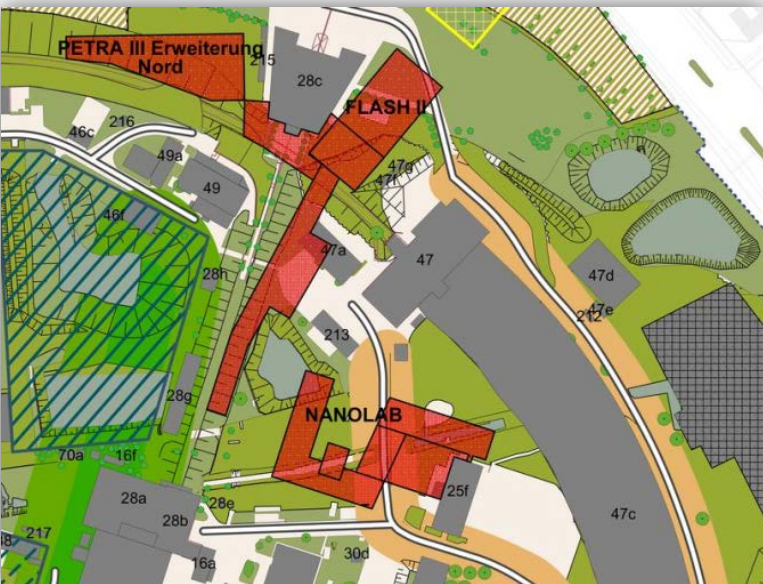


Figure by courtesy of REINER BECKER ARCHITEKTEN

# Research Platforms: CSSB

## > Centre for Structural Systems Biology

- new interdisciplinary centre on the DESY campus dedicated to infection research
- alliance of 9 universities and non-university research institutions
- office and lab space for about 150 scientific and technical staff from 2016 on
- DESY will provide direct and fast access to experimental facilities at PETRA III



# Outstations: University Hamburg

## > University of Hamburg

- **Institute for Experimental Physics**
- **Institute of Laser Physics**
- **Center for Optical Quantum Technologies**
- **II. Institut für Theoretische Physik**
  
- **PIER**- Partnership for Innovation, Education and Research  
founded in 2011: strong coordination of both institutions' research and training activities (i.e. graduate school), also promoting transfer of science and technology throughout the Hamburg region





# Outstations: EMBL & HZG

Close cooperation at beamlines

## > EMBL European Molecular Biology Lab Unit Hamburg

- Operating beamlines P11-13
- Separate Proposal + Review System
- run their own User Office

## > Helmholtz-Centre Geesthacht

- German Engineering Materials Science Centre
- Beamlines P05 & P07
- Proposal System & User Administration via DESY System DOOR
- Chair one of the DESY Photon Science Proposal Review Panel



## Head of Office: Daniela Unger (~0.8 FTE) (since Dec 2012)

### > Communication

- between users – beamline staff - IT (user portal DOOR)
- On-site DESY departments
- DESY Photon Science User Committee
- Other related organizations (on-site institutes, BiostructX, Komitee für Forschung mit Synchrotronstrahlung .....

### > Conceptual works, contribute to:

- development of new proposal & report procedure (DOOR)
- development of new publication database interface
- development of legal user agreement, user guidelines & brochures .....

### > Webpage

- Users' Area (concept, keeping updated)
- All user relevant aspects of Webpage



# USER OFFICE– tasks & personnel

- > Coordination Proposal Review Process & Meetings
- > Editorial Work
  - User Experimental Reports
  - DESY Photon Science Annual Report
- > Compilation of Numbers & Statistics (users, publications etc.)
- > Preparation of Users' Meeting
- > Travel Cost Reimbursement Control
- > Request Tracker
- > Publication appointee
- > ..... miscellaneous



## Secretary: Maja Stolper (0.5 FTE)

### > Handling of requests concerning

- Registration of users
- Changes of personal data entries
- Travel reimbursement
- Safety training & activation of certificates
- Access Cards to Facilities
- General user support
- Visa support
- ....



# Support by DESY administration

## > International Office (3 FTE)

- invitation letters, applications for residence permits, visa extensions etc.
- assistance with DESY requirements and procedures
- medical and liability insurance for DESY guests
- schools and daycare in Hamburg, kindergarten at DESY
- general information on daily life in Hamburg

## > Hostel

- supplies rooms during experimental stays, conferences
- 2 FTE plus external service personnel

## > Housing (1 FTE)

- assists in finding long-term housing (>4 weeks)

## > IT, PR, Library, Conference Organisation, TT



# COMMERCIAL USERS: Services by DESY

## > Technology Transfer: Industrial Service Group

- acts as contact and advise interested Commercial Users (in cooperation with DESY Photon Science)
- Administration of commercial access
- Customer Acquisition
  - Guided tours for interested companies
  - Website, Brochures
  - Exhibitions (Exhibitor and Guest)



## > Rapid Access (2-8 weeks)

## > To-be-published or confidential measurements

## > standardized contracts and framework cooperation

# COMMERCIAL USERS: access types

## > Feasibility Studies:

- Check, if intended experiment at DESY is appropriate for research question
- Measurement time (incl. scientific support): 4 hours
- Free of charge

## > Short-Term Access:

- Measurement time: minimum 4 hours
- Costs range from 550 € (published) to 786 € (confidential) per hour
- extra costs if complete measurement is done by DESY personnel

## > Long-Term Cooperation:

- cooperation agreement between the company and DESY with an annual flat rate
- fast & flexible access to measurement times incl. support by Industrial Service Group
- conditions vary with duration of the cooperation & requests of the company





## > Participation in SCIENCE LINK (2012-2014)

- network of the EU-Baltic Sea States  
Max IV Laboratory, Lund Sweden, DESY Hamburg, Helmholtz-Zentrum Berlin, Helmholtz-Zentrum Geesthacht offer free experiment time and consultation to new customers
- 9 applications during the first call, 21 during the second and 36 applications during the third call

## > Commercial Access 2009-2012

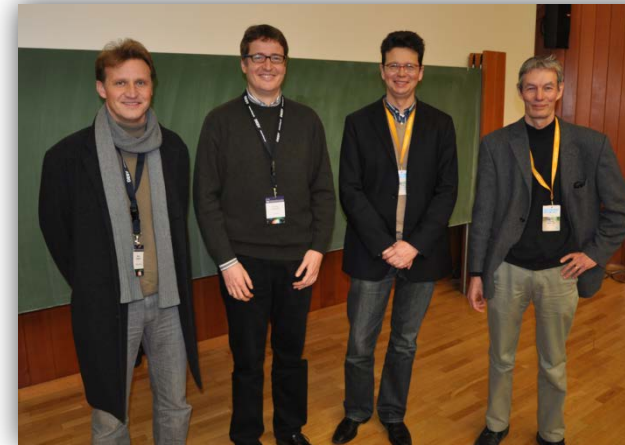
	2009	2010	2011	2012
Companies	10	13	9	14
Measurement time [h] (DORIS III and PETRA III)	1.453	1.070	861	899





# DESY Photon Science User Committee (DPS-UC)

- elected by the users for a term of 3 years during the DESY Photon Science Users' Meeting
- at least 5 external members
- direct link Users - DESY Photon Science Management
- DPS-UC is kept informed on operation schedules and developments at DESY Photon Science
- gives recommendations for the scientific program of the users' meeting
- takes note of the users' needs and concerns regarding on-site work during experiments, operating procedures, general user support etc.
- complaints are confidential unless otherwise agreed with user
- Chair reports during Users' Meeting



DPS-UC Members (from left to right):

Markus Perbandt  
Christian Schroer  
Peter Müller-Buschbaum (Chair)  
Thomas Möller

Joachim Wollschläger



# USER COMMUNITY: DESY Photon Science Users' Meeting

- > Annual meeting of all interested Users
  - **fixed date:** last Friday in January
  - No conference fee
- > Since 2013 two-days meeting together with European XFEL
- > ~ 800 registrations in 2013



## DESY PHOTON SCIENCE USERS' MEETING 2013

25 January 2013  
at DESY in Hamburg, Germany

Joint Soft X-ray Sessions with European XFEL Users' Meeting  
and Satellite Meetings  
24 January 2013

European XFEL Users' Meeting 2013  
23 January 2013

We invite our users and collaborators to attend the DESY Photon Science Users' Meeting 2013, and are looking forward to welcoming interested scientists from many different disciplines for discussions of the current and future research at the DESY light sources:

- > **DORIS III**
- > **PETRA III**
- > **FLASH**

This unique range of light sources in the Hamburg region will be complemented by the forthcoming

- > **European XFEL**

Topics to be covered at the Users' Meeting include news from the photon science activities, research highlights, and a report from the User Committee. A Soft X-ray session featuring FLASH experiments is organised on Thursday, 24 January in conjunction with the European XFEL Users' Meeting. A joint poster session will take place on Friday afternoon accompanied by a vendor exhibition.

Registration is required, especially for poster submissions.

Contact:  
eventsphotonscience@desy.de

Web page: [photon-science.desy.de/usersmeeting](http://photon-science.desy.de/usersmeeting)



Accelerators | Photon Science | Particle Physics  
Deutsches Elektronen-Synchrotron  
A Research Centre of the Helmholtz Association



# USER COMMUNITY : DESY Photon Science Users' Meeting

- > Poster Session and Scientific talks
- > Industry & Vendor Session
- > Satellite Workshops on instrumentation and development



# User Access to Photon Science Facilities

- > Access to facilities is administrated via **DOOR** (**DESY Online Office for Research with Photons**) (based on DUO by PSI)
- > **DOOR** is currently being re-structured and new version will be launched after PETRA III shutdown



ACCELERATORS | PHOTON SCIENCE | PARTICLE PHYSICS  
Deutsches Elektronen-Synchrotron  
A Research Centre of the Helmholtz Association

DESY PHOTON SCIENCE | PETRA III | FLASH | DESY

## DOOR

DESY Online Office for Research with Photons

## PHOTON SCIENCE

DESY generates pulses of brilliant light.

### DOOR HOME

- » Contact
- » New User
- » Lost Password
- » Registered User

### NEXT DEADLINES

Beamtime Application FLASH	28-Feb-2013
Annual Report	15-Apr-2013

At present, there are no calls for PETRA III and FLASH proposals because extension projects require longer shutdown periods starting mid of February 2013 for FLASH and in September 2013 for PETRA III. Submission deadlines will be published asap.

Welcome to DOOR which is based on DUO from PSI. Please note that you need to register in order to use this system to submit research proposals and apply for beamtime. Please do not hesitate to [contact us](#) in case you have further questions.

#### Registered DOOR user

Log on using your DOOR user name and password or your Umbrella (EAA) credentials.

#### Forgotten password

If you do not remember your DOOR user name and/or password, your log on information will be sent to your previously registered e-mail address.

#### New DOOR user

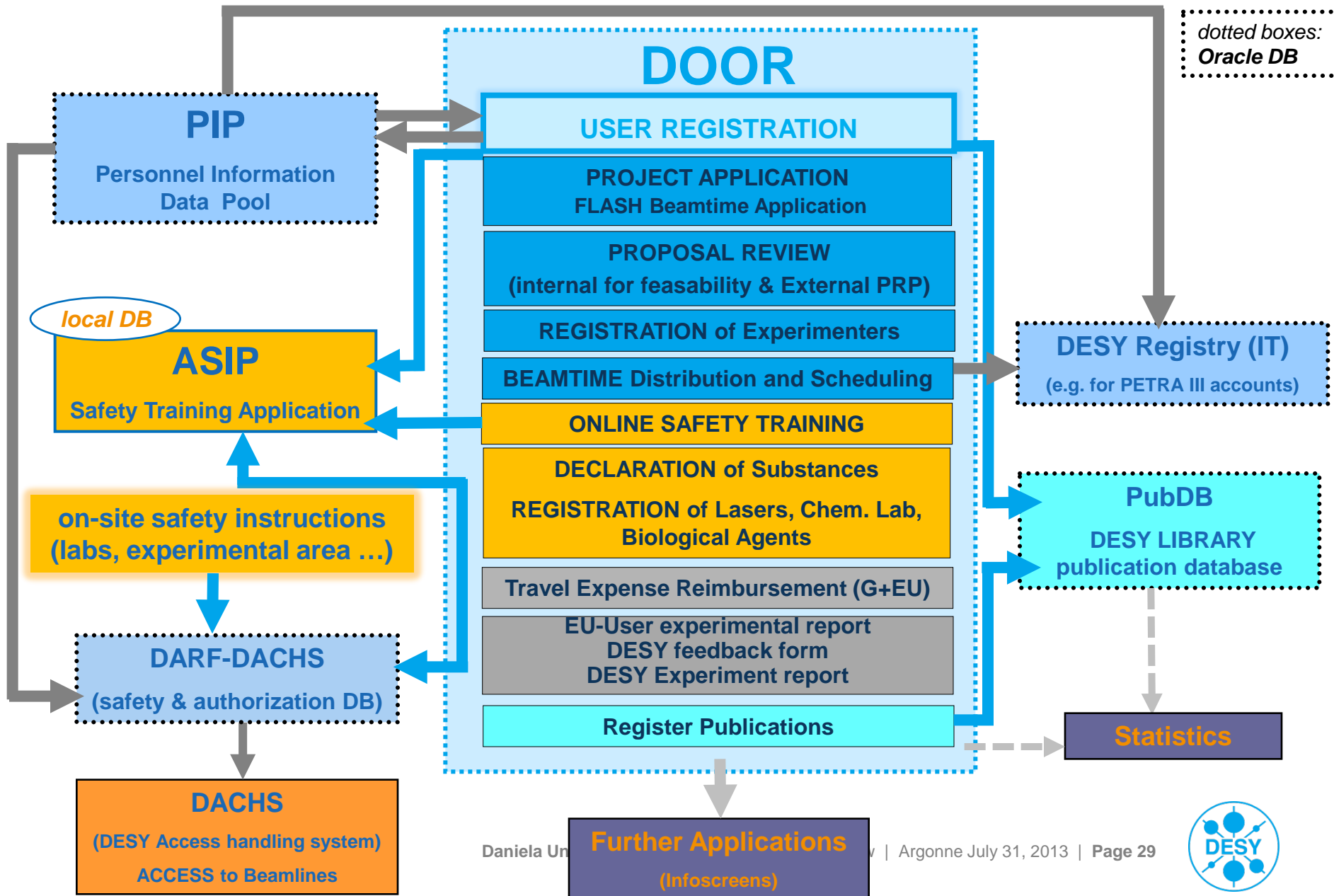
To obtain a DOOR user name and password, please register here. Users with an existing Umbrella (EAA) account might first log on at Umbrella [here](#). Or you might set up an Umbrella (EAA) account before registering [here](#).

#### Imprint

DESY Imprint

Please [contact us](#) if you encounter problems using DOOR.

# DOOR – DESY Online Office for Research with Photons



# DOOR Proposal submission: General Part

PROPOSAL SUBMISSION GENERAL PART			
Step 1: General part	Step 2: Beamline specification	Step 3: Detailed project description	Step 4: Submit proposal
TITLE (*)			
Example Three-Way Meeting			
LEADER/PRINCIPAL INVESTIGATOR			
Project Leader (*)	Dr. Wolfgang Drube	[Select]	[Remove]
Principal Investigator (*)	Dr. Daniela Unger	[Select]	[Remove]
CO-PROPOSERS			
Co-Proposer		[Select]	[Remove]
Co-Proposer		[Select]	[Remove]
Co-Proposer		[Select]	[Remove]
Co-Proposer		[Select]	[Remove]
Co-Proposer		[Select]	[Remove]
EXPERIMENT SPECIFICATIONS			
Experiment Type (*)	Short-term (valid 6 months)	▼	
Review Committee (*)	X-ray Spectroscopy	▼	
Primary Research Field (*)	Key technologies (including information and communication technologies)	▼	
Secondary Research Field	Transport and space	▼	
Research Category (*)	Industrially relevant	▼	
Proposals Type	General user	▼	
BRIEF DESCRIPTION OF THE PROPOSED EXPERIMENT (MAX 500 CHARACTERS) (*)			
500 characters left			
(*) these fields are mandatory.			



# DOOR Proposal submission: Beamline Specification

PROPOSAL SUBMISSION: 20130039  
BEAMLINE SPECIFICATION

Step 1: General part    Step 2: Beamline specification    **Step 3: Detailed project description**    Step 4: Submit proposal

**REQUIRED BEAMLINE (HELP ON BEAMLINES; PETRA III BEAMLINES)**

Experimental station requested (\*)    PETRA III: P08

Beamline setup/Instrument (\*)    Liquid diffractometer (LISA)

**GENERAL INFORMATION**

Number of shifts (8h) required (\*)   

Photon energy/energies (\*)   

Beam spot size on sample (\*)   

Filling mode (\*)     40 bunches     60 bunches     multi bunches     any

**PREFERRED DATES (PETRA III OPERATING SCHEDULE)**

Preferred start date   

Unacceptable dates   

**SELECT DEVICES**

**DETECTORS (\*)**

Mythen (1280 strips, 50x50 $\mu\text{m}^2$ )     Yes     No

Roper Scientific (4096x4096 pixels, 15x15 $\mu\text{m}^2$ )     Yes     No

**EQUIPMENT (\*)**

Lakeshore 340 temperature controller     Yes     No

**OPTIONAL ADDITIONAL MESSAGE**

(\*) these fields are mandatory.

check  
approve  
accept User Agreement  
submit

attach two-page description  
of proposal as PDF



# BEAMTIME REQUEST: proposals

## PETRA III

- > Proposals: 2 calls per year (deadlines: 1 March & 1 September)
- > Short term proposals
  - one-step proposal system, no extra beamtime application
  - validity ½ year
  - only one beamline can be selected
- > Long term proposals
  - proposal submission as for short term
  - validity 3 years
  - in total 5 beamtime applications are possible
  - beamtime application along with regular proposal calls, i.e. 2 x per year

## FLASH

- > Irregular call periods, no beamline specification in DOOR, extra beamtime application always necessary due to complexity of experiments





# PROPOSAL REVIEW : Internal & External by PRP

- > Internal: Technical feasibility
- > External by PRP: Rating

DOOR
PHOTON

DESY Online Office for Research with Photons
DESY generates pulses of light

---

Full name  
User name

---

PRP

[Online proposal review](#)  
Use this to view proposals assigned to you submit your ratings and comments visible to the DESY Photon Science coordinator)

[View or download a Table of your Ratings](#)

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[Online proposal review](#)  
Use this to view proposals assigned to you submit your ratings and comments visible to the DESY Photon Science coordinator)

[View or download a Table of your Ratings](#)

RATING FOR PROPOSAL II-20130012

---

TITLE

Bla blub unter bestimmten Bedingungen

---

LEADER/PRINCIPAL INVESTIGATOR

Project Leader	Ms. Maja Stolper
Principal Investigator	Dr. Daniela Unger

---

CO-PROPOSERS

Co-Proposer	Mr. Jan-Peter Kurz
-------------	--------------------

---

DETAILED PROPOSAL DESCRIPTION

Attachment [View detailed proposal description](#)

---

CONTRIBUTIONS OF LEADER OR PRINCIPAL INVESTIGATOR TO THE DESY PHOTON SCIENCE ANNUAL REPORT OF PREVIOUS PROPOSALS

No contributions so far!

---

COMMENTS OF INTERNAL REVIEWERS

Reviewer	General advice	Comment
Jan-Peter Kurz	OK	ein Traum
Wiebke Laasch	not reviewed	not reviewed
Daniela Unger	not reviewed	not reviewed

---

PROPOSERS' REQUESTS

			ACCEPT	REJECT	UNDECIDED
Category	II (valid 2 years)		<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
Beamline	P08	Shifts	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>

---

YOUR RATING

Please select your rating

---

YOUR COMMENT (IF APPLICABLE)

---

Dan

## > Online safety training ASIP

- Chose modules appropriate for experiment
- Validity 6-12 months

**SICHERHEITSTRAINING**

SAFETY TRAINING DOCUMENTS LOGOUT

Personal training overview  
Dr. Daniela Unger

Module	Status	Duration
Basic-Instructions	Completed	15 min
PETRA III	Completed	6 min
Photon Science Experiments	Completed	7 min
Radiation protection	Completed	6 min
More information	Completed	6 min
FLASH	Completed	9 min
Photon Science Experiments	Completed	7 min
More information	Completed	6 min
Working with lasers	Completed	3 min
Office work	Completed	2 min

activities print certificate

Send signed certificate to USER OFFICE for registration in DARF-DACHS



## BEFORE COMING TO DESY

- > Declaration of substances
- > Registration of laboratory use, lasers, biological agents
  - checked by Beamline Scientist
  - if necessary checked by Photon Science Safety Officers (Technical Infrastructure)
  - if further necessary by DESY Safety Department

## DURING STAY AT DESY BEFORE EXPERIMENT

- > On-site instructions by beamline and lab team
- **fed into DACHS data base**



# USER EXPERIMENT FEEDBACK

**should be delivered immediately after experiment,  
but many users don't**

- > Success of experiment**
- > Machine reliability and Beam stability/quality**
- > Reason for beam loss**
- > Technical condition of experimental setup**
- > Scientific & technical support**
- > Administrative service**
- > Computing**
- > suggestions**



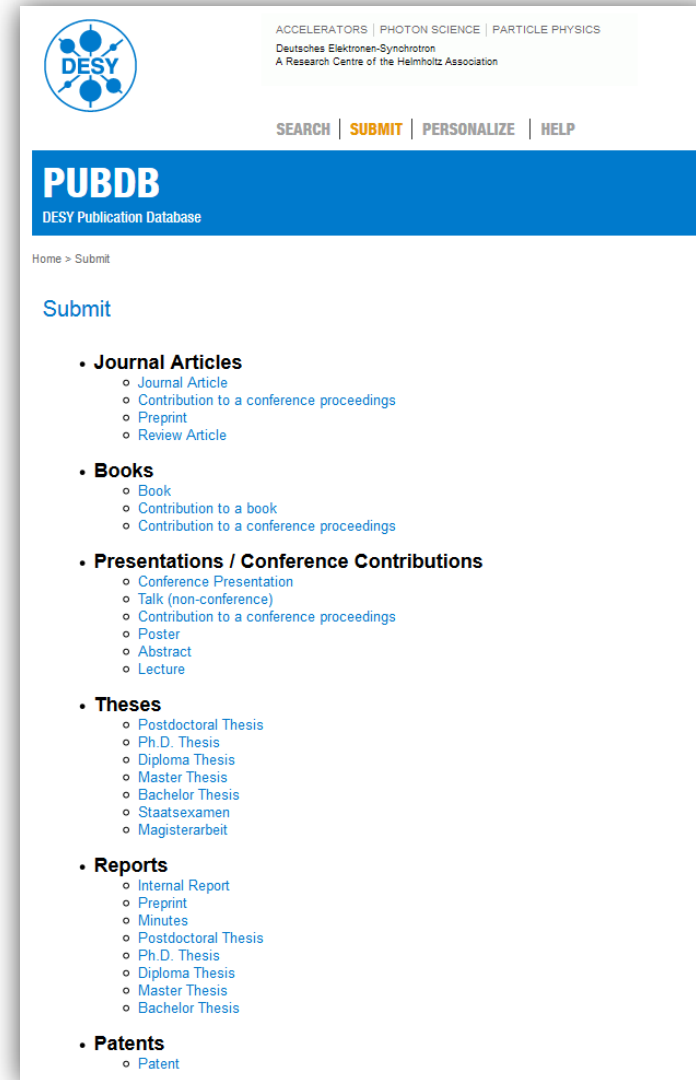
# EXPERIMENTAL REPORT

- > „Experimental Report“ will substitute „Contribution to Annual Report“ from 2014 on (after shutdown of PETRA III and relaunch of DOOR and the proposal system)
- > due 3 months after Experiment
  - 1 page only
  - Should be absolutely mandatory!
- > will not be published



# PUBLICATIONS: how to collect

- > Publications are collected via DESY Publication Database (PubDB)
- > Users are directed to the PubDB via DOOR
- > Submissions of users are cross-checked
  - by User Office (Publication Appointee)
  - Released by Library
- > Problem: not all authors register their articles!  
→ We try to „complete“ publication list by web search



ACCELERATORS | PHOTON SCIENCE | PARTICLE PHYSICS  
Deutsches Elektronen-Synchrotron  
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SEARCH | **SUBMIT** | PERSONALIZE | HELP

## PUBDB

DESY Publication Database

Home > Submit

### Submit

- **Journal Articles**
  - Journal Article
  - Contribution to a conference proceedings
  - Preprint
  - Review Article
- **Books**
  - Book
  - Contribution to a book
  - Contribution to a conference proceedings
- **Presentations / Conference Contributions**
  - Conference Presentation
  - Talk (non-conference)
  - Contribution to a conference proceedings
  - Poster
  - Abstract
  - Lecture
- **Theses**
  - Postdoctoral Thesis
  - Ph.D. Thesis
  - Diploma Thesis
  - Master Thesis
  - Bachelor Thesis
  - Staatsexamen
  - Magisterarbeit
- **Reports**
  - Internal Report
  - Preprint
  - Minutes
  - Postdoctoral Thesis
  - Ph.D. Thesis
  - Diploma Thesis
  - Master Thesis
  - Bachelor Thesis
- **Patents**
  - Patent





# PUBLICATIONS: how to collect


- > Fast input with DOI, PUBMED, arXiv ID possible
  - > accomplished by info about groups, beamline, facility...
  - > Verification of identity of authors by comparison with DESY personnel database
- important for exact publication statistics generated with PubDB


Submit New Record


Journal Article



Import data  DOI, arXiv, PUBMED...


Group(s) involved \*   
ATLAS, CFEL, MKK1,...


Beamline/Experiment/Facility \*   
PETRA beamline, HERA, facility machine,...


Grant name / Proposal No.  EU project, FS proposal number




Report Number  DESY-THESIS-001


Author(s) / Editor(s) \*   
Start typing lastname and select.. 


Title \* 


Journal \*  start typing a journal name


DOI 


Volume \*  Issue  Pages \*  e.g 47-103


Publication Year \*  yyyy


Language  Click to select...


Publisher  Forschungszentrum Jülich

Place of publication  Jülich

Abstract 

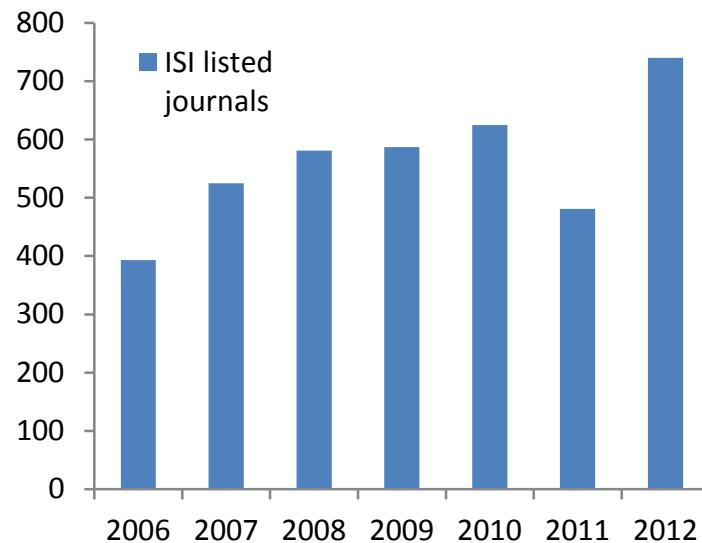
URL 

Additional information for library   
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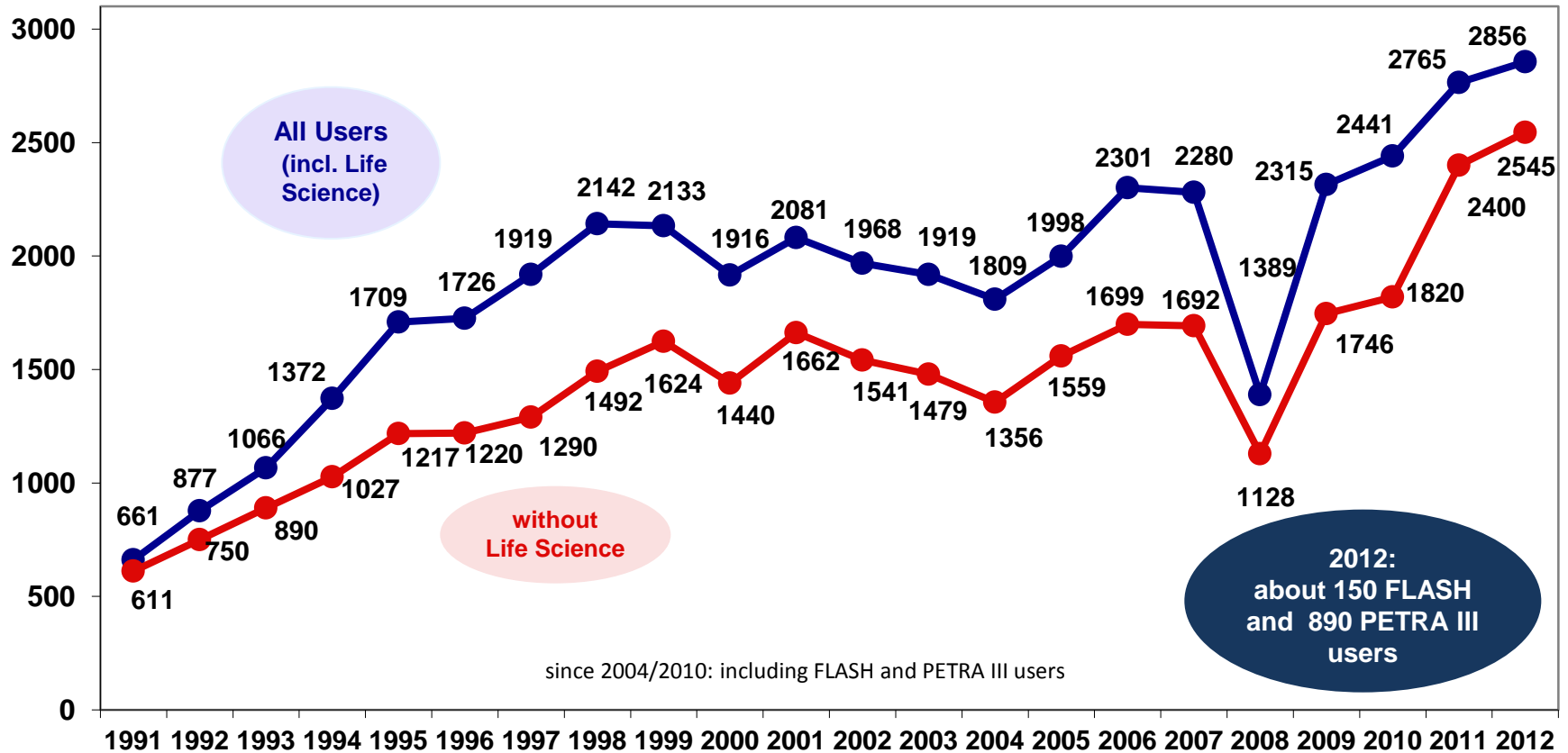
# STATISTICS: ISI-Listed Publications

> Data retrieved from PubDB (operational since 2006)

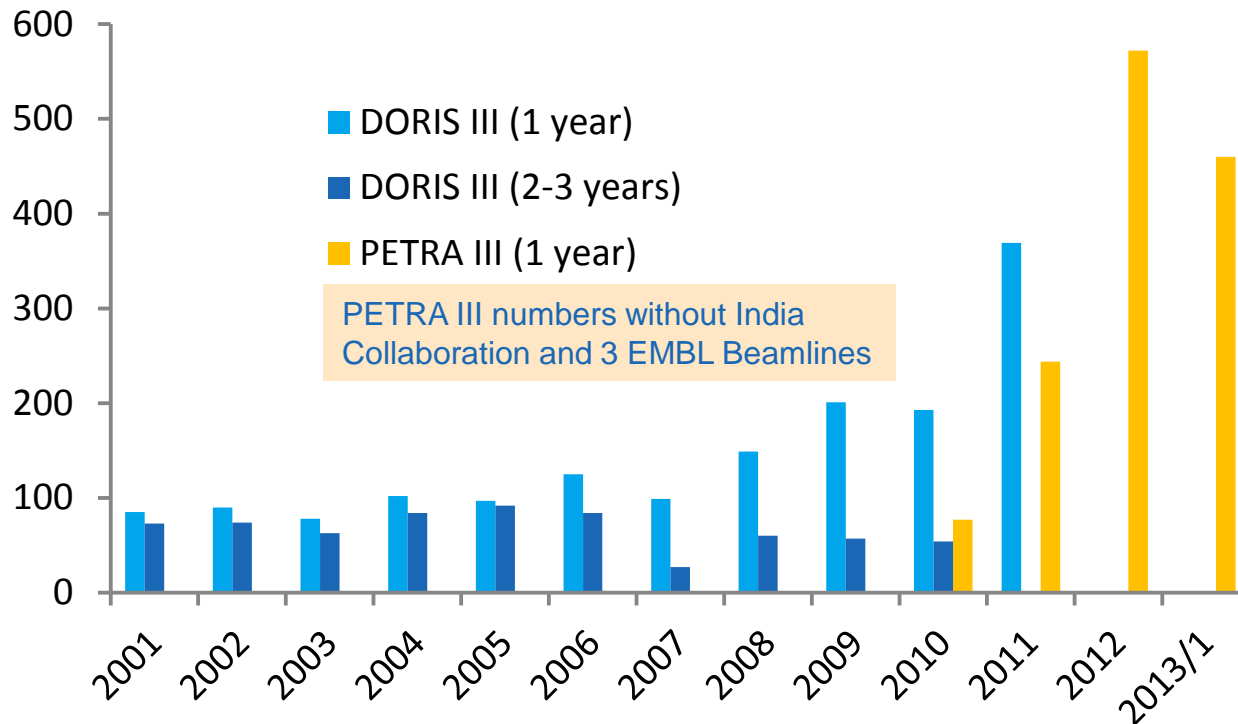




# STATISTICS – User numbers at DESY Photon Science



# STATISTICS – Proposal numbers



- > In 2013/1 high proposal numbers probably also due to upcoming shutdown



# STATISTICS – Overbooking (Shifts)

year	DORIS III			PETRA III		
	Applied	Received		Applied	Received	
2010	16415	10048	1.6	1020	720	1.4
2011	14046	10241	1.4	3508	2303	1.5
2012	11032	8312	1.3	9664	4159	2.3

→ based on shifts applied for in beamtime applications (after approval of proposal)

period	FLASH		
	Applied	Received	
2010/11	948	324	2.9
2012/13	793	186	4.7

→ based on shifts applied for in proposal



# ANNUAL BUDGET– Running Costs

## > PETRA III (Million €)

Year	Machine	Experiments	TOTAL (incl. Overhead)
2010*	14.0	7.0	31.5
2011	14.7	10.8	38.25
2012**	15.0	11.9	40.35

\* start official user operation

\*\* fully operational

## > FLASH (Million €)

Year	Machine	Experiments	TOTAL (incl. Overhead)
2010	13.8	2.8	24.9
2011	14.9	2.9	26.7
2012	15.1	3.9	28.5



# EDUCATION & OUTREACH: Schools

- > **practical training** in DESY's technical workshops and research groups (>14 years, after personal application)
- > nationwide **“girls' day”**: practical day especially for girls to promote their interest in natural and technical sciences
- > **“physik.begreifen”** “grasp physics“: pupils laboratory
  - vacuum (ca. 4<sup>th</sup>-8<sup>th</sup> grade / 9<sup>th</sup>-10<sup>th</sup> grade)
  - radioactivity
  - quantum physics (11<sup>th</sup>-13<sup>th</sup> grade)
  - particle physics (9<sup>th</sup>-10<sup>th</sup> grade)
  - e-lab (electron physics) (11<sup>th</sup>-13<sup>th</sup> grade)
  - cosmic rays master classes (at school or at DESY, >9<sup>th</sup> grade)
  - cosmic rays international Master Classes (2 weeks, 10<sup>th</sup>-13<sup>th</sup> grade)



# EDUCATION & OUTREACH: general public

- > **DESY guided tour** around the DESY site including a lecture
- > annual **“Open Day” “Night of Science”** (>10.000 visitors in one day)
- > monthly **Science Café DESY**: public afternoon lecture & discussion for pupils (>6<sup>th</sup> grade) and adults
- > monthly **WISSENSWERTE**: public evening talks around Physics



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**Science Café DESY**  
Programm für Juni + August 2013

Physik ist cool! | Biologie ist geliebungslos! | Technik ist Nerdentum!

★ **12. Juni** Dr. Oliver Seock  
**Hautnah - Zell- und Bakterienhaut im Forschungsfokus**

★ **28. August** Dr. Axel Lindner  
**Mit „Licht-durch-die-Wand“ auf der Suche nach der dunklen Seite des Universums**

30. Juni - 31. Juli 2013  
Hamburg, Sommerferien

Astronomie ist phantastisch! | Mathematik macht Spaß! | Chemie ist Faszination!

<http://sciencecafe.desy.de> Immer mittwochs, 17 Uhr, DESY-Bistro  
Eintritt frei.

Forschungszentrum DESY  
Notkestraße 85  
22607 Hamburg

Weitere Informationen unter:  
[www.desy.de](http://www.desy.de)



Beschleuniger | Forschung mit Photonen | Teilchenphysik  
Deutsches Elektronen-Synchrotron  
Ein Forschungszentrum der Helmholtz-Gemeinschaft



**WISSENSWERTE.**  
Öffentlicher Abendvortrag



**Der Teilchenfänger**  
Deutsches Museum  
BONN

**Wolfgang Pauli – Der Teilchenfänger**  
Wolfgang Pauli (1911 – 1958) gilt als einer der herausragenden Experimentalphysiker und Ideengeber der bundesdeutschen Wissenschaftsgeschichte. Wolfgang Pauli kreiert wissenschaftliches Interesse reichte von der Atom- und Kernphysik bis hin zur Untersuchung von Elementarteilchen. Für seine bahnbrechende Idee zur „Spinne“ erhielt er 1930 den Nobelpreis für Physik. Pauli war ein virtuoser Experimentator, begabter Hochschullehrer und weitsichtiger Wissenschaftsorganisator. Von 1952 bis 1981 war er Professor für Experimentalphysik und Direktor des Physikalischen Instituts der Rheinischen Friedrich-Wilhelms-Universität Bonn, er war an der Gründung des Deutschen Elektronen-Synchrotrons beteiligt, wurde am europäischen Kernforschungszentrum CERN und war als Präsident der Alexander von Humboldt-Stiftung Botschafter der deutschen Wissenschaftskultur.

**Ralph Burmester**  
Deutsches Museum Bonn

Do., 15. August 2013, 19.00 Uhr

DESY-Hausaal, Eintritt frei  
Notkestraße 85, 22607 Hamburg

Weitere Information: <http://fortbildung.desy.de>

Beschleuniger | Forschung mit Photonen | Teilchenphysik  
Deutsches Elektronen-Synchrotron  
Ein Forschungszentrum der Helmholtz-Gemeinschaft



# EDUCATION & OUTREACH: Students

## > International DESY Summer School for undergraduates (physics, biology, chemistry, crystallography, material science, geology)

- 100/30 students at DESY/Photon Science
- lectures, experimental & research activities
- 8 weeks



**SUMMER STUDENTS.**  
 DESY International Summer Student Program 2013  
 July 16 to September 5

DESY is one of the world's leading accelerator centers for investigating the structure of matter. DESY develops and builds large particle accelerators and conducts research in the fields of photon science and particle physics. The research facilities of DESY are used by a large international community of scientists. Each summer DESY offers students in physics or related natural science disciplines the opportunity to participate in its research activities. About 100 students from all over the world take part in DESY's research and attend the lecture program.

**Photon Science**  
 Summer students will participate in experiments related to the use of Synchrotron Radiation which are carried out with soft and hard X-rays using a variety of spectroscopic and scattering techniques for research in the fields of physics, chemistry, biology etc.

**Elementary Particle Physics, Astrophysics and Accelerators**  
 Summer students will work in the fields of experiments in elementary particle physics (LHC, ILC, HERA) and astrophysics (CTA), development of particle accelerators, theory of elementary particles or computing.

**Application Deadline is January 31, 2013.**  
 Qualified applicants should have completed three years of full time studies at a university level by summer 2013. All participating students will obtain financial support.

[www.desy.de/summerstudents](http://www.desy.de/summerstudents)

Deutsches Elektronen-Synchrotron  
 A Research Centre of the Helmholtz Association

**Coherence**  
**Modern Laser Concepts**  
**Free-Electron Lasers**  
**Coherent X-Ray Imaging**  
**Future applications**

**Science with advanced coherent light sources**

Fall School, October 7-11  
 DFG Graduate School 1355  
 Hamburg, Germany

Advanced coherent light sources covering a wide spectral range from the THz to the X-ray regime have become available in recent years. These novel sources allow for new experimental techniques and future applications. The fall school "Science with advanced coherent light sources" provides insight into the basic concepts and new directions of research covering modern laser concepts, free-electron lasers and coherent x-ray imaging. The school addresses Master/Diploma students, PhD students and young researchers alike.

No fee and limited free accommodation. The number of participants is limited. Detailed information on the program and how to apply can be found online.

**Invited Speaker**  
 Massimo Altarelli (European XFEL), David Atwood (UC Berkeley), Henry Chapman (DESY/FEL), Markus Drescher (U Hamburg), Mikael Ericson (U Lund), Florian Grunert (U Hamburg), Guyon Huber (U Hamburg), Frank Kärtner (DESY/FEL), Jonas Kirz (LBL, Berkeley), Manfred Leon (U Hannover), Uwe Morgner (U Hannover), Keith Nugent (La Trobe, Melbourne), Julianne Rausch-Schultenburg (U Hamburg), Matthias Wollenhaupt (U Kassel)

**Organizational committee**  
 Markus Drescher (U Hamburg), Gerhard Grubel (DESY), Dirk-Oliver Lehmann (U Hamburg), Neus Songcoot (U Hamburg)

[www.physik.uni-hamburg.de/school2013](http://www.physik.uni-hamburg.de/school2013)

DFG Graduate School 1355  
 Physics with new advanced coherent radiation sources

## > Fall School - in cooperation with Uni Hamburg, 1 week

## > PIER Helmholtz Graduate School



# Acknowledgements

- > **Thanks for providing data & information and slides to**
  - **Wiebke Laasch**
  - **Ilka Mahns**
  - **Wolfgang Drube**
  - **Lucia Incoccia**
  - **Jan-Peter Kurz**
  
- > **Thank you for your attention**





# USER COMMUNITY: Workshops

- Mar. 2012: Inelastic X-ray Scattering Activities at PETRA III
- May. 2012: Workshop: German-Russian beamline at PETRA III Extension
- Jul. 2012: A2 achievements and future perspectives at PETRA III
- Sep. 2012: 2nd Workshop for Extreme Conditions Research in a Large Volume Press at PETRA III
- Oct. 2012: Science beyond 4 Mbar and using dynamic compression
- Jan. 2013 Users' Meeting
  - Nanoscience at large scale facilities: discussion of the DESY nanolab
  - 3rd workshop on X-ray nano-imaging of biological and chemical systems at PETRA III
  - Status and Perspectives of Small-angle scattering at DESY
  - Extreme Conditions Research at DESY
  - The German Engineering Materials Science Centre (GEMS):  
Status and perspectives of the Helmholtz-Zentrum Geesthacht Outstation at DESY
  - High energy x-ray scattering at DESY
  - In Situ Rheology
- Mar 2013: Third German-Swedish workshop within the Röntgen-Ångström-Cluster on materials science
- Sep. 2013: Structural and in situ materials science at Beamline P02.1 @ PETRA III
- Oct. 2013: GISAXS 2013
- Oct. 2013: Workshop on High Pressure, Planetary, and Plasma Physics



# USER EXPERIMENT FEEDBACK

## > should be delivered immediately after experiment

1. which station or instrument was used for the experiment?
2. Overall success of your experiment?
3. Machine reliability during your experiments?
4. Beamtime lost during your experiment?
  - Hours lost due to machine problems:
  - Hours lost due to optics or controls problems:
  - Hours lost due to end-station problems:
  - Hours lost due to computing problems:
  - Hours lost due to other problems:
5. How do you rate the photon beam quality (flux, stability, lifetime)?
6. Technical condition of the experimental setup?
7. Scientific and technical support provided by beamline staff?
8. Service provided by the DESY Photon Science user office?
9. Service provided by DESY (guest house, canteen, library, safety issues, etc)?
10. Local computing infrastructure and data handling?
11. Suggestions for improvements

