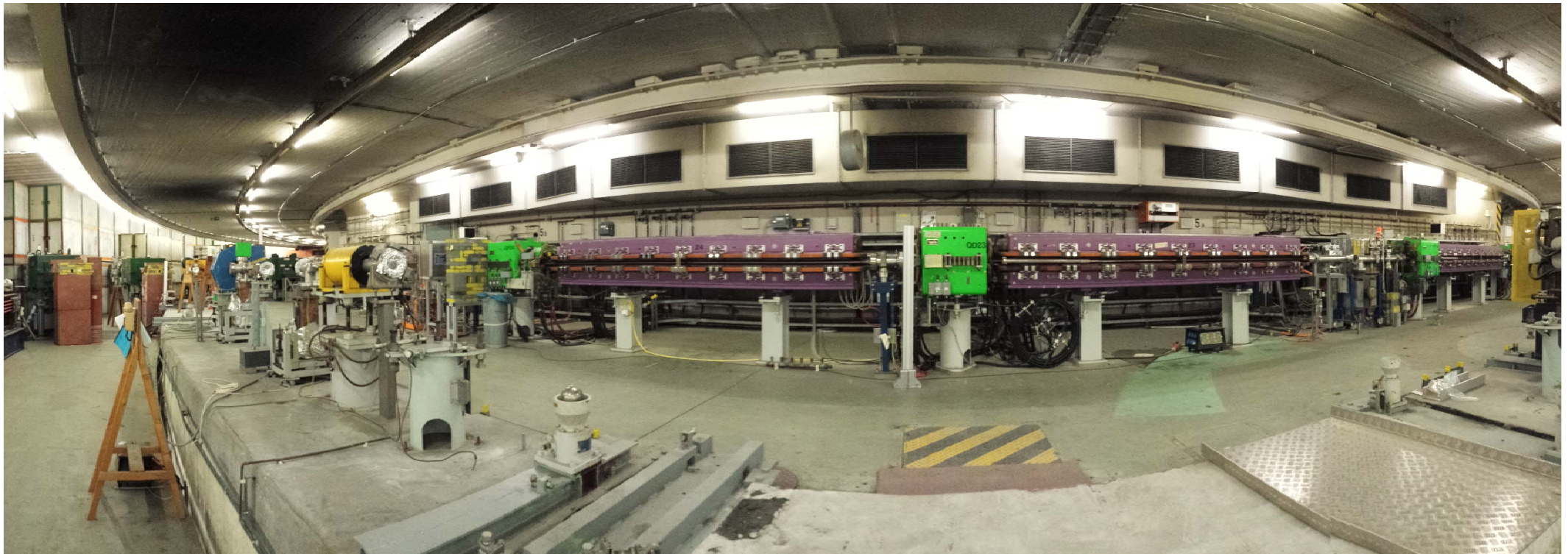


# WP10.2: TA DESY- II Test Beam Facility

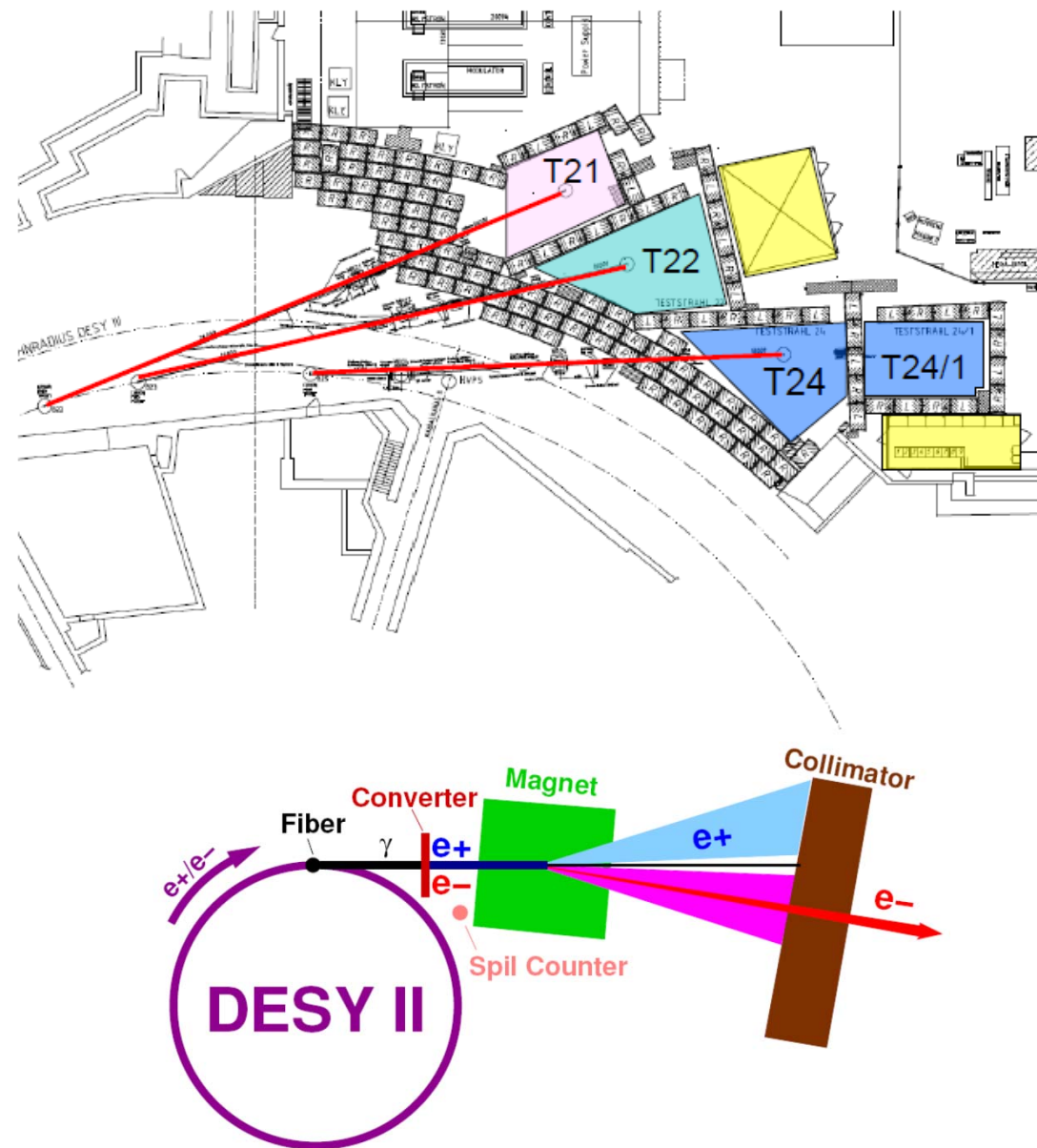
AIDA-2020 Kickoff Meeting



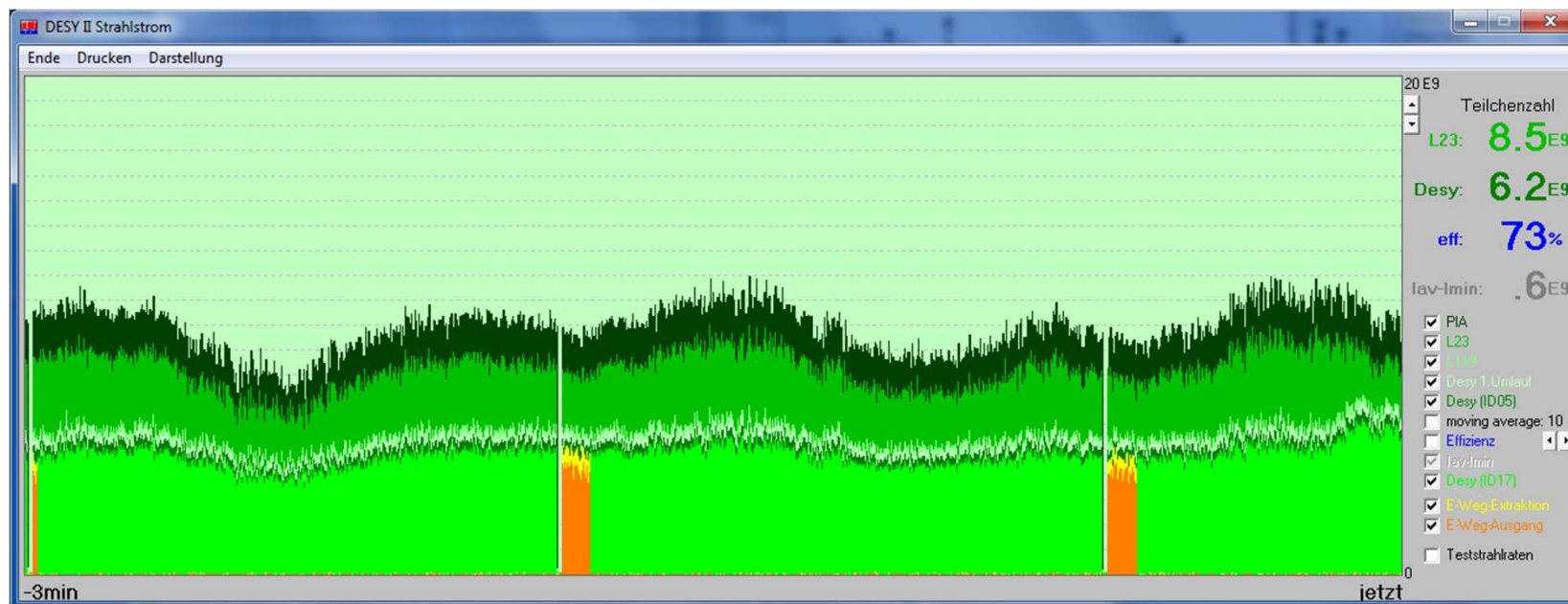
Marcel Stanitzki, Natalia Potylitsina-Kube  
DESY



- ✓ Three test beam lines
- ✓ Electron or positron beam from 1-6 GeV (spread: ~5%)
- ✓ Beam Generation:
  - DESY II beam converted into bremsstrahlung at carbon fiber targets
  - Converter target:  $e^- / e^+$
  - Magnet to select particle type and momentum
  - Rates up to several kHz depends on beam line, energy, target material, collimator setting



- ✓ DESY-II synchrotron
  - ~ 99 % uptime during schedules runs
- ✓ Beam structure
  - 1 MHz clock/ Magnet cycle 12.5 Hz (accelerating from 450 MeV to 6.3 GeV)
  - 1 bunch per fill (30 ps)
- ✓ Interruption during Extraction for Petra ( every min)
  - Otherwise almost DC beam (no spill structure)



- All three test beam lines have
  - Interlock systems
  - Magnet control
  - Patch panels with pre-installed cables
  - Gas warning systems
  - Fast Internet (1000/100 Mbit) connection (DHCP)
- The user can get
  - Translation stages
  - Premixed gases
- They have to bring
  - Data acquisition incl. computers
  - Trigger scintillators (except T24/1)

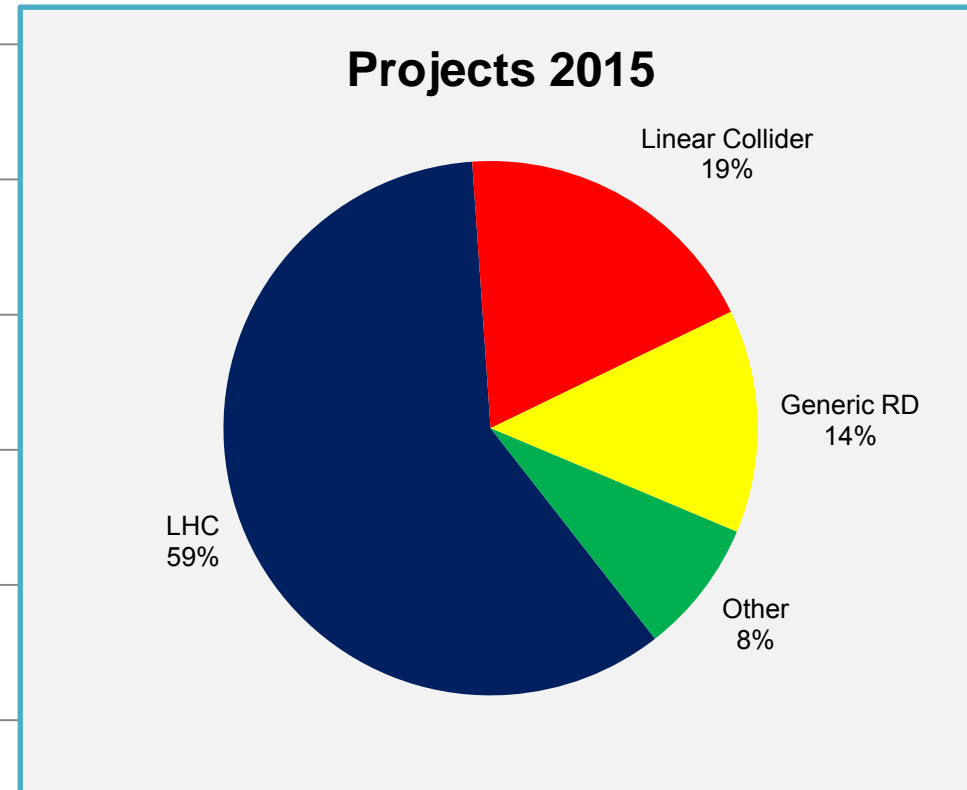
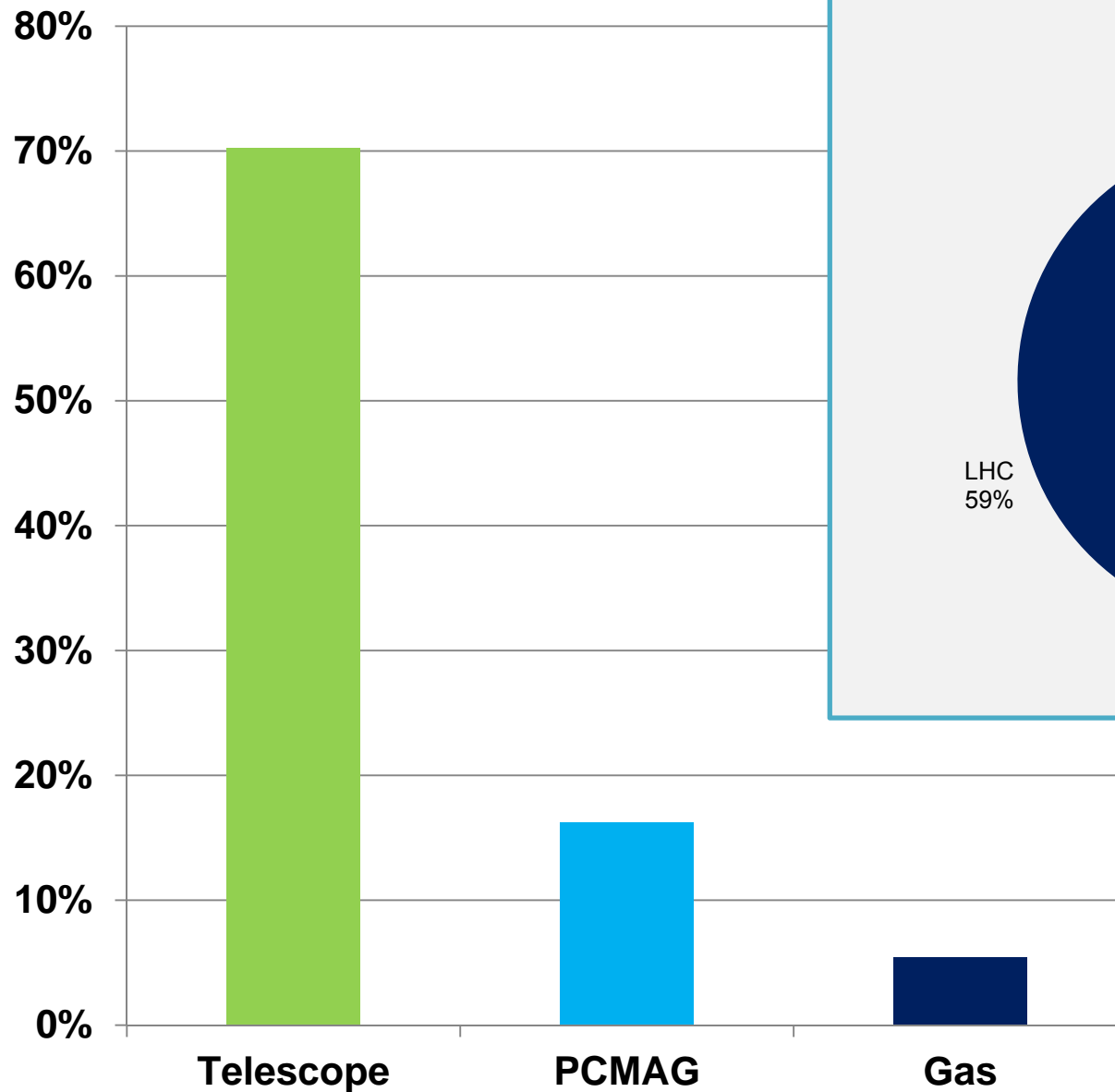


- 2 Pixel Beam Telescopes in TB21 and TB22
  - Hardware, trigger, reconstruction software
  - 6 MAPS pixel planes, 1x2 cm<sup>2</sup>
  - 3  $\mu\text{m}$  resolution, trigger rates up to 3 kHz
  - Second telescope available from October 2014
- Magnets
  - 1 T superconducting solenoid with 85 cm inner radius in TB24/1(mounted on movable stage)
  - Big dipole in TB 21



- Shutdown 2014  
March-December 2014
- Shutdown 2014 work at the Test Beam  
Lots of improvements for the users  
Significant commitment by DESY
- Beam since January 2015  
Smooth start-up after 9 month shutdown
- DESY Shutdown on 11/11/15
- Year 2016-2019  
9-11 month of beam foreseen per year  
Detailed 2016 schedule will be posted soon





- Several changes mandated by Safety Dep.
  - Interlock handling
  - Enforcing of training checks
- Most important
  - **DACHS cards are now mandatory for all Users**
  - **Users need to register beforehand**
- DACHS controls
  - Access to the huts & part of the Interlock
- DACHS cards have information on safety training
  - **No Training → No Access**
- Up and running since Jan 2015





All user group members have to be registered timely before their measurements at DESY. All data provided over INDICO are used for

- Issuing of DACHS cards
- Reporting over Test Beam activities (incl.EU-report)



The screenshot shows the ALICE-ITS registration interface. At the top, there is a navigation bar with a 'More' dropdown and a search icon. Below this, the title 'ALICE-ITS' is displayed. The date and location are '9-15 Februar 2015 DESY Hamburg' with a note 'Europe/Berlin timezone'. A search bar is present on the right. On the left, a sidebar menu includes 'Overview', 'Registration', 'Registration Form', 'List of registrants' (highlighted), and 'Door form'. Below the sidebar is a 'Support' link. The main content area is titled 'Current registrants (8)' and contains a table with columns for name, institution, city, and country/region. The table lists eight registrants from various institutions including Pusan National University, Nuclear Physics Institute ASCR, and CERN.

<a href="#">name</a>	<a href="#">institution</a>	<a href="#">city</a>	<a href="#">country/region</a>
	Pusan National University	Busan	REPUBLIC OF KOREA
	Nuclear Physics Institute ASCR	Rez	CZECH REPUBLIC
	CERN	Geneva	SWITZERLAND
	CERN	Geneva	SWITZERLAND
	CERN	Geneva	SWITZERLAND
	IRFU, CEA Saclay	Gif-Sur-Yvette	FRANCE
	CERN	Geneva	SWITZERLAND
	CERN	Geneva	SWITZERLAND

## Registration Form

Please, note that fields marked with \* are mandatory

### Personal data

**Title**

\* **First Name**

\* **Surname**

\* **Institution**

\* **City**

\* **Country/Region** -- Select a country --

\* **Email**

### Further Information

To be filled out by DESY external users only! (NOT employed by DESY)

\* **Gender** -- Choose a value --

\* **Date of Birth**  DD/MM/YYYY

\* **Place of birth**

\* **Nationality** -- Select a country --

\* **I am a new user** -- Choose a value --

\* **Financial Support**

AIDA

None

\* **Guest status** -- Choose a value --

\* **Arrival date**  DD/MM/YYYY

\* **Departure date**  DD/MM/Y

### Project Information

Has to be entered only once by the project leader, but it is mandatory for the project leader!

**Project Name**

**Startdate**

**Enddate**

**Project Abstract**  
Please give a short description what you want to do.

**Project Description**  
Please describe which services you need and

#### Additional Hardware

- Telescope
- Translation Stages
- Trigger Electronics
- Others, please specify in the project

#### Safety hazards

- Use of flammable gases
- Use of lasers
- High voltage
- Magnetic field
- Radioactive sources
- Hazard materials will be used.

Irradiated samples are considered as hazardous registered in advance.

### Safety Instructions

**Please be aware that the German and DESY regulation force you to attend a radiation safety briefing and a general safety briefing.**

\*  Agreement

I agree that the data recorded in this form are stored in the central staff database at DESY. If necessary, the data may be forwarded to other DESY information systems, such as the phone directory, the room directory, the account database, access control systems (DACHS), the dosimetry database, or the DESY library. Parts of this recorded data will also be used for the scientific reporting as mandated by the HGF and the EU.

\* I have already a DACHS access card: -- Choose a value --

If you do not have a DACHS card you will receive after your INDICO registration a pre-filled form to sign up. The ready DACHS card could be picked up at DESY(Bldg.6)

register

## AIDA-2020 TRANSNATIONAL ACCESS APPLICATION FORM

Before completing this form please contact the relevant facility manager for a preliminary discussion about your proposal. Contact details can be found [here](#).

Please use capital letters. For each item refer to **Guidelines for Applications (Encl. 1)**.

### 1) Experiment

<b>Project Title</b>		
<b>TA-Project Acronym</b> <i>(perhaps already given to you by TA-coordinator)</i>	AIDA-2020/DESY-	
<b>Project duration</b>	<b>From:</b>	<b>To:</b>

Type of facility	Access provider	Infrastructure	
Beam test	CERN	PS&SPS	<input type="checkbox"/>
	DESY	DESY-II	<input type="checkbox"/>
Irradiation test	CERN	IRRAD	<input type="checkbox"/>
	CERN	GIF++	<input type="checkbox"/>
	JSI	TRIGA Reactor	<input type="checkbox"/>
	KIT	KAZ	<input type="checkbox"/>
	UCLouvain	CRC	<input type="checkbox"/>
	UoB	MC40 Cyclotron	<input type="checkbox"/>
Detector characterisation	RBI	RBI-AF	<input type="checkbox"/>
	ITAINNOVA	EMClab	<input type="checkbox"/>

**Project abstract** (please write a short summary of the project in the box below)

### 2) Please list 2-3 relevant publications of the group leader

- 1.
- 2.
- 3.

### 3) Project description and research planned during use of facility (max 1 page).

### 4) Access requested under TA Programme

All researchers	Home Institution	Researcher Status (UND;PGR;P DOC;TEC;E XP)	Total no. of days	No. of visits	AIDA-2020 Financial support requested (yes/no)

*Please add extra rows or information if needed*

### 5) Comments (mention here if you will travel by rental/private car, or directly before/after another trip)

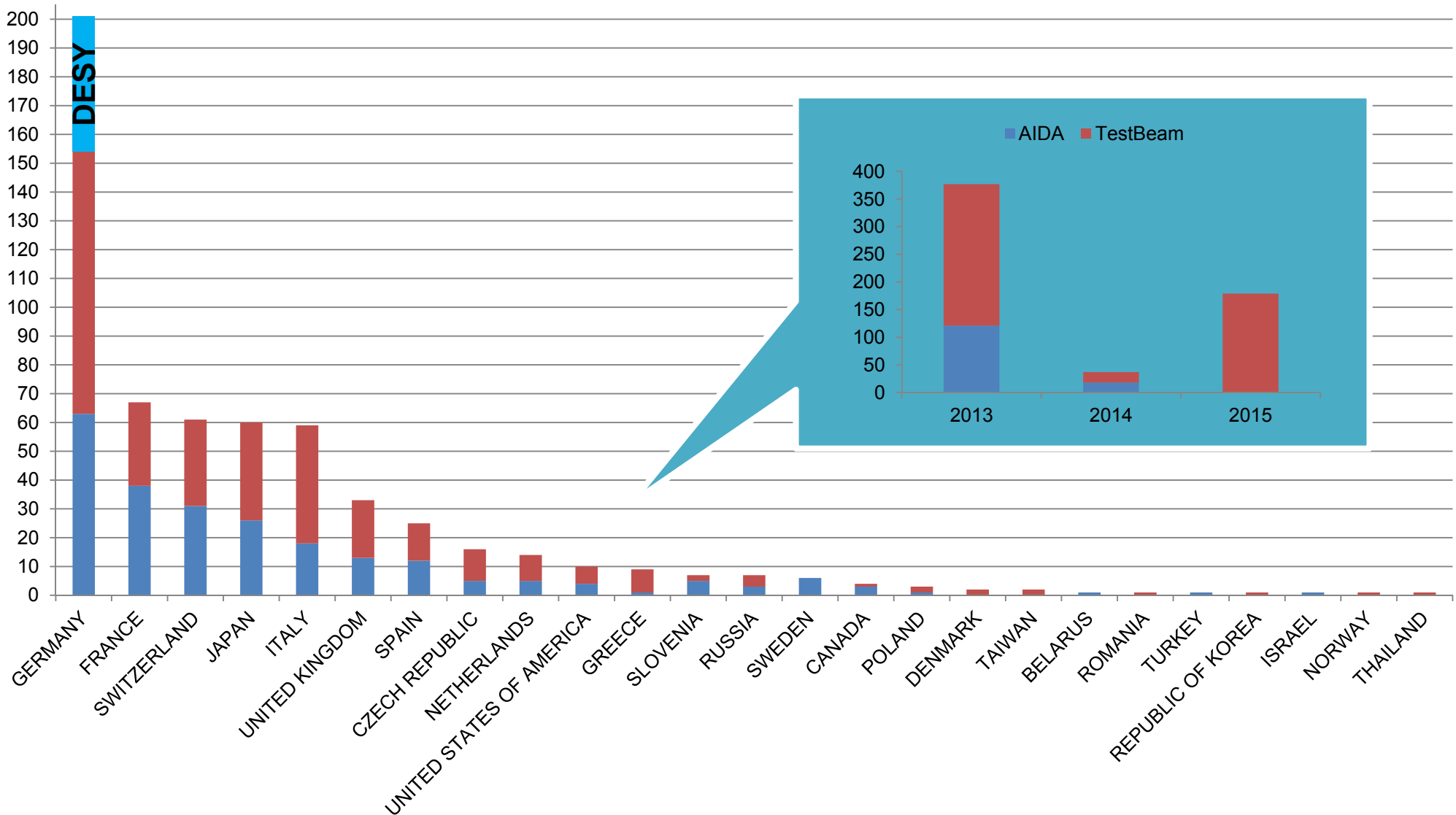
Date            01.05.2015

Group Leader Signature

.....

.....

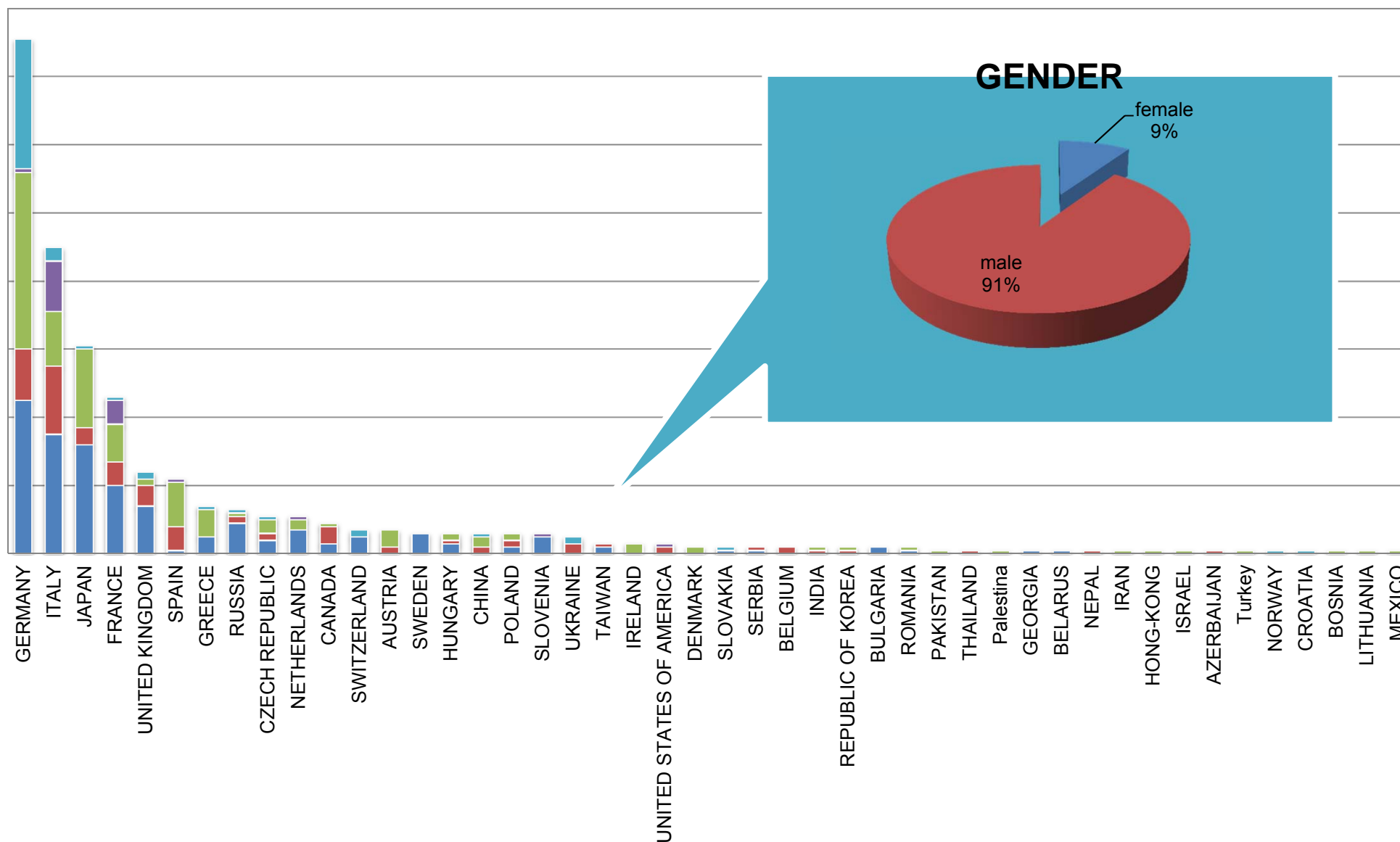
Users by country of host institution & repeated visits (new users in red)



**TOTAL users since 2013: 593 from 25 countries & 46 nationalities**

# User nationalities & status

■ Experienced researcher  
 ■ Post doc researcher  
 ■ Post graduate  
 ■ Technician  
 ■ Under graduate



- ✓ Transnational access to DESY II: Min. quantity of access to be provided: 8,400
- ✓ Estimated number of users: 120
- ✓ Estimated number of days spent at the infrastructure: 11,7 per project
- ✓ Estimated number of projects: 30

TOTAL direct costs for users support in WP10.2 TA DESY:  
**105.000,00 EUR or ~875EUR/per TA user**

<b>Project: M1-M48</b>	Eligible submissions	Selected TA-projects	Users supported	Units of access (TB week-hour = 7days with 24 hours)
<b>Planned in AIDA-2020 (EU-users)</b>		<b>30</b>	<b>120</b>	<b>8.400 or 50 TestBeam weeks</b> (with 24 hours for 7days)
<b>Thereof possible in AIDA-2020 (non EU-groups)</b>		~ 6		Up to 20% of 8.400 = 1.680 or <b>10 TestBeam weeks</b>
<b>Planned in AIDA</b>		<b>25</b>	<b>130</b>	<b>40</b>
<b>Real TOTAL in AIDA :</b>	<b>37</b>	<b>37</b>	<b>194/133</b>	<b>72,5</b>

## ELBE 30 MeV electron test beam, HZDR Dresden/Germany

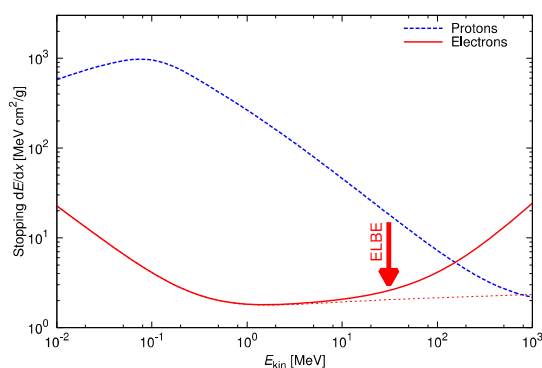


40 MeV, 1.6 mA superconducting electron linac with various secondary beams:

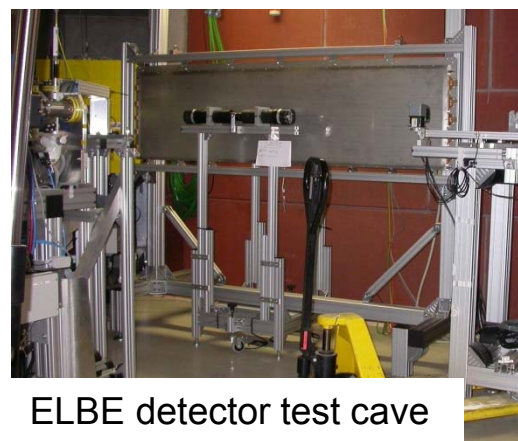
- ◆ Neutron time-of-flight
- ◆ Positrons
- ◆ Bremsstrahlung
- ◆ 2 free electron lasers (4-250  $\mu\text{m}$ )
- ◆ THz facility

ELBE parameters used for detector test-beams:

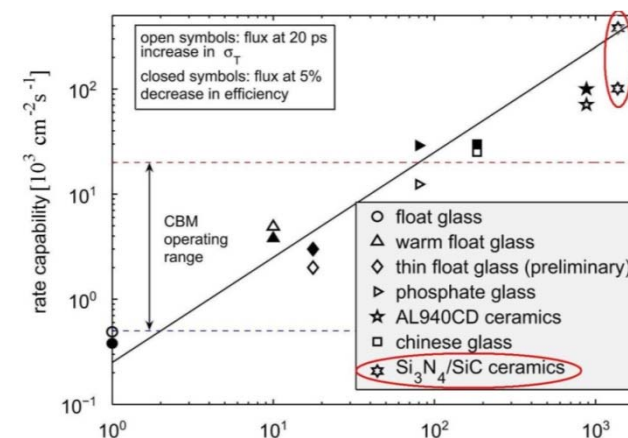
- ◆ Use direct electron beam at 30 MeV
- ◆ Accelerator RF as 35 ps time reference
- ◆ Intensity range: single electrons (!) to  $\mu\text{A}$
- ◆ Several modes for time structure of beam
- ◆ Open for outside users, go to <http://www.hzdr.de/elbe> -> Electrons



Beam energy close to minimum ionizing



ELBE detector test cave with 200 kg, 2m long MRPC prototype



Example for ELBE test beam result: RPC rate capability up to  $10^5 \text{ cm}^{-2}\text{s}^{-1}$

- ✓ DESY - II Test Beam Facility runs smoothly: technically as well as administratively
- ✓ New registration procedure including DACHS-usage successfully implemented
- ✓ User data records are completed for any time and any kind of reporting
- ✓ Strong support by lab management
- ✓ AIDA-2020: we are open for business!