

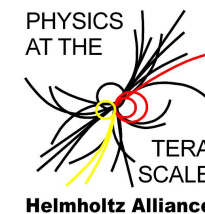
# Introduction to Terascale Physics

Welcome and information

Thomas Schörner-Sadenius  
DESY-FH



DESY, 17 March 2014

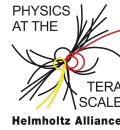


# WELCOME ...

Helmholtz Alliance

## PHYSICS AT THE TERASCALE

Deutsches Elektronen-Synchrotron DESY +++ Forschungszentrum Karlsruhe +++ Max-Planck-Institut für Physik +++ Rheinisch-Westfälische Technische Hochschule Aachen +++ Humboldt-Universität zu Berlin +++ Rheinische Friedrich-Wilhelms-Universität Bonn +++ Technische Universität Dortmund +++ Technische Universität Dresden +++ Albert-Ludwigs-Universität Freiburg +++ Jacobs-Liebig-Universität Gießen +++ Georg-August-Universität Göttingen +++ Universität Hamburg +++ Ruprecht-Karls-Universität Heidelberg +++ Universität Karlsruhe (TH) +++ Johannes Gutenberg-Universität Mainz +++ Ludwig-Maximilians-Universität München +++ Universität Regensburg +++ Universität Rostock +++ Universität Siegen +++ Julius-Maximilians-Universität Würzburg +++ Bergische Universität Wuppertal +++



> ... to the 5th “Introduction to Terascale Physics” school.

- Of course we have changed, adapted, improved. But we also repeat a large fraction of last year’s programme.

> ... to five days of lectures, tutorials, and discussions.

> ... to Hamburg

- We have a dense programme, but I hope that you find some time to toddle around and enjoy the city!

## Introduction to Terascale Physics

17-21 March 2014  
DESY, Hamburg

The “Introduction to Terascale Physics” school aims at providing the essential information and techniques on the subject that bachelor and master students will find very helpful for a productive thesis.

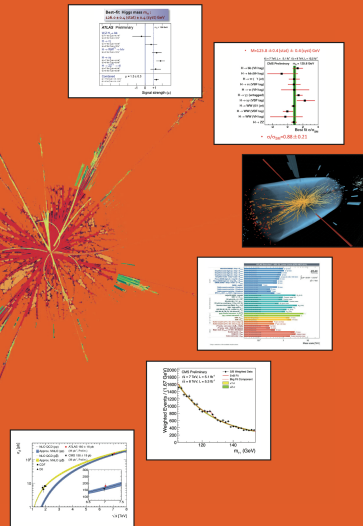
The programme consists of lectures on the following topics:

- Physics at the Terascale
- LHC detectors
- Electroweak physics at the LHC
- QCD at the LHC
- Top quark physics
- Higgs physics
- Searches for new physics

In addition, a tutorial covering four half-days will highlight many of the lecture contents and will provide hands-on experience with typical data analysis problems and techniques.

The deadline for registration is 7 March 2014. The school fee will be 40 Euros. Support for travel and accommodation can be granted on request. For more details and to register see

[www.terascale.de/intro2014](http://www.terascale.de/intro2014)



# DESY - Deutsches Elektronen-Synchrotron

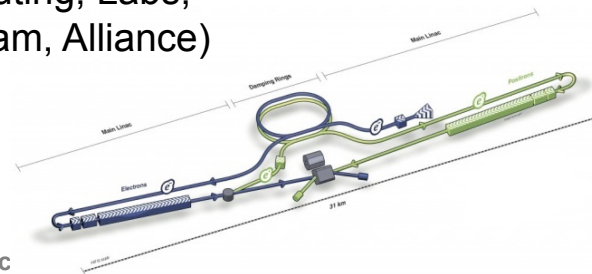
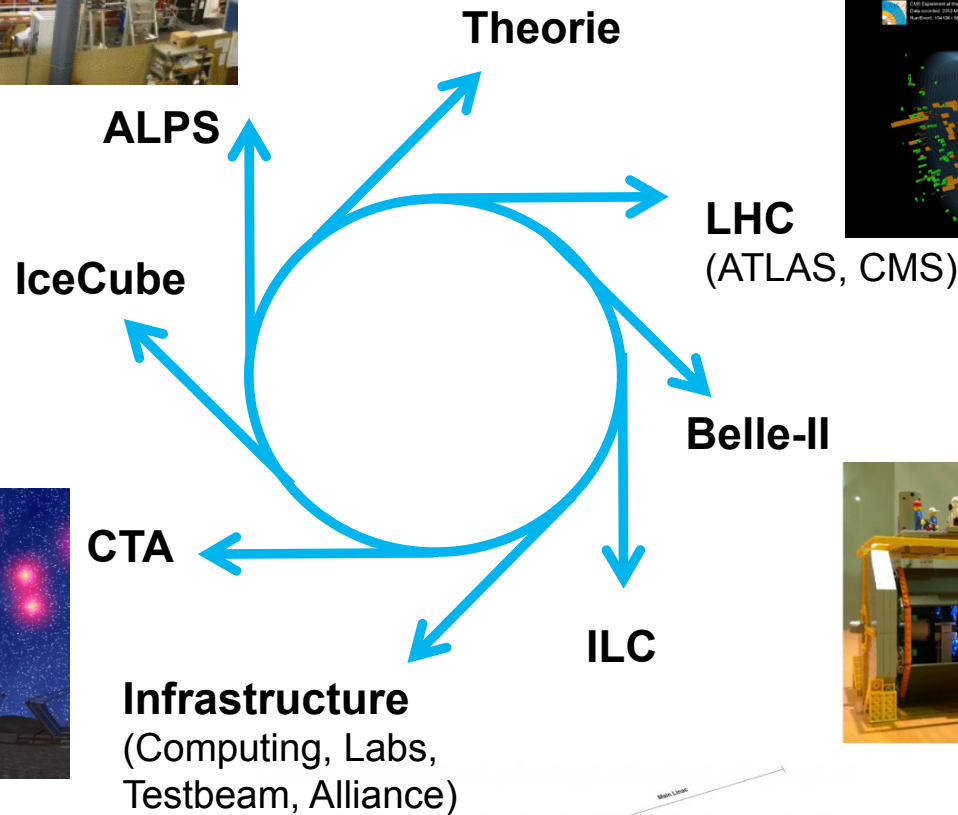
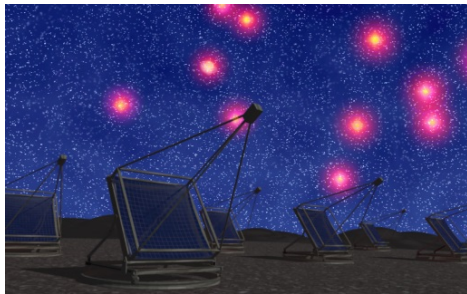
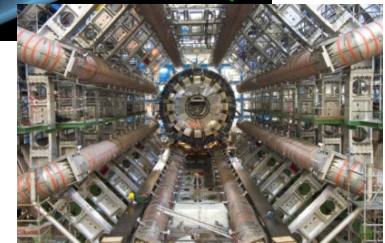
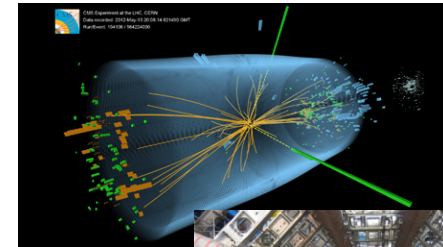
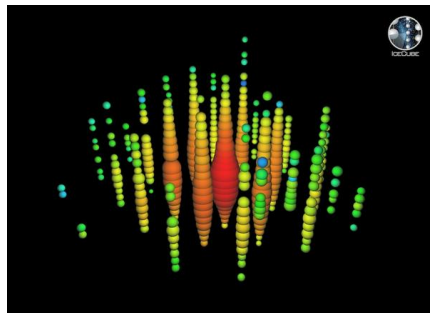
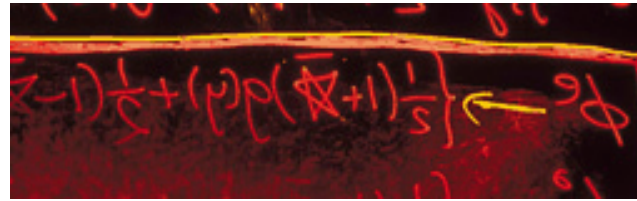
- Founded 18 December 1959
- Research centre of Helmholtz Association, Germany's largest organisation for basic research with large-scale infrastructures.



- Located in Hamburg and Zeuthen (Berlin)
- Annual budget: 192 MEUR (90% federal money, 10% state money)
- 2000 staff (650 scientists), 100 apprenticeships, 700 students and young postdocs.
- 3000 guest scientists from 40 countries.
- Particle physics, photon science, accelerator development and operation.



# Particle Physics at DESY



# THE HELMHOLTZ ASSOCIATION + ALLIANCE



Helmholtz: Largest German research organisation with 3.8 billion budget and 36,000 people. One research area: “Structure of Matter”.

Particle physics: DESY + KIT

Helmholtz Alliance (since 2007): Use complementarity of Helmholtz and universities.

DESY + IT + MPI + 17 universities; 1000 physicists.

Concentrate on physics analysis, Grid computing, detector development (and accelerator research).

Important aspect: education and training.



# EDUCATION AND WORKSHOPS

**Heimholtz Alliance**  
**PHYSICS AT THE TERASCALE**

**Analysis Centre Schools and Workshops 2011**

- Introductory School to the Terascale**  
21-25 February 2011  
DESY, Hamburg  
terascale.de/intro2011
- Monte Carlo School 2011**  
14-17 March 2011  
DESY, Hamburg  
terascale.de/mc2011
- Computer Algebra & Particle Physics 2011**  
20-25 March 2011  
DESY, Zeuthen  
terascale.de/capp2011
- School on Statistics 2011**  
4-7 April 2011  
Johannes Gutenberg-Universität, Mainz  
terascale.de/statistics2011
- Geant4 Training**  
10-13 May 2011  
DESY, Zeuthen  
terascale.de/geant2011
- Standard Model Benchmark Processes at the LHC**  
15-17 June 2011, DESY, Zeuthen  
terascale.de/smcandies2011
- Single-Top Workshop**  
5-6 September 2011  
DESY, Hamburg  
terascale.de/singletop2011

[http://www.terascale.de/schools\\_and\\_workshops](http://www.terascale.de/schools_and_workshops)

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# TIMETABLE

Introduction to Terascale Physics 2014  
from Monday 17 March 2014 (08:00) to Friday 21 March 2014 (18:00)

  : Sessions
   /   : Talks
   : Breaks

	Monday 17 March 2014	Tuesday 18 March 2014	Wednesday 19 March 2014	Thursday 20 March 2014	Friday 21 March 2014
<b>AM</b>	09:00 <b>Arrival and registration-</b> Thomas Schoerner- Sadenius (DESY) (until 10:00)	09:00 <b>Standard Model physics at the LHC-</b> Arno Straessner (IKTP, TU Dresden) (until 10:30)	09:00 <b>Standard Model physics at the LHC-</b> Arno Straessner (IKTP, TU Dresden) (until 10:30)	09:00 <b>Higgs physics-</b> Philip Bechtle (DESY) (until 10:30)	09:00 <b>SUSY and exotica-</b> Isabell-A. Melzer- Pellmann (DESY) (until 10:30)
	10:00 <b>Physics at the Terascale - why, what, how?-</b> Markus Cristinziani (Uni Bonn) (until 12:00)	10:30 --- Coffee break ---	10:30 --- Coffee break ---	10:30 --- Coffee break ---	10:30 --- Coffee break ---
	12:00 --- Lunch break ---	11:00 <b>Cross-section measurements-</b> Judith Katzy (DESY) (until 12:30)	11:00 <b>Top physics-</b> Georg Steinbrueck (Hamburg University) (until 12:30)	11:00 <b>Higgs physics-</b> Philip Bechtle (DESY) (until 11:45)	11:00 <b>HEP beyond the LHC-</b> Marcel Stanitzki (DESY) (until 12:30)
		12:30 --- Lunch break ---	12:30 --- Lunch break ---	11:45 <b>SUSY and exotica-</b> Isabell-A. Melzer- Pellmann (DESY) (until 12:30)	12:30 --- Lunch break ---
<b>PM</b>	13:30 <b>Detectors at the LHC - past, present, future-</b> Ingrid-Maria Gregor (DESY) (until 15:00)	14:00 <b>Tutorial-</b> Christian Sander (University of Hamburg) Alexander Schmidt (Universität Hamburg) (until 18:00)	14:00 <b>Tutorial-</b> Christian Sander (University of Hamburg) Alexander Schmidt (Universität Hamburg) (until 18:00)	14:00 <b>Tutorial-</b> Christian Sander (University of Hamburg) Alexander Schmidt (Universität Hamburg) (until 18:00)	14:00 <b>Questions &amp; answers-</b> Thomas Schoerner- Sadenius (DESY) (until 15:00)
	15:00 --- Coffee break ---		19:00 <b>School dinner-</b> Thomas Schoerner- Sadenius (DESY) (until 23:00) ()		15:00 <b>Guided tour of DESY</b> (until 17:30)
	15:30 <b>Tutorial-</b> Christian Sander (University of Hamburg) Alexander Schmidt (Universität Hamburg) (until 18:00)				
	18:00 <b>Welcome reception-</b> Thomas Schoerner- Sadenius (DESY) (until 19:00) ()				



# ORGANISATIONAL ISSUES

- > Late registration: every day with Mrs Clayton in building 1, 1c/O2-337.
- > Tutorials:
  - Made using your laptops or the provided DELL desktops with the concept of a virtual machine inside VirtualBox – which you hopefully all have tested.
  - We invite you to work in pairs –increases benefit and facilitates discussions.
- > Social events:
  - Small (!) reception tonight with drinks and some fingerfood (in this SR).
  - Workshop dinner on Thursday in the DESY bistro.
- > Requests from the organisers
  - No laptop work etc. during lectures
  - Questions immediately – and feedback is very welcome (Friday discussion session)
- > WLAN – information has been handed out.





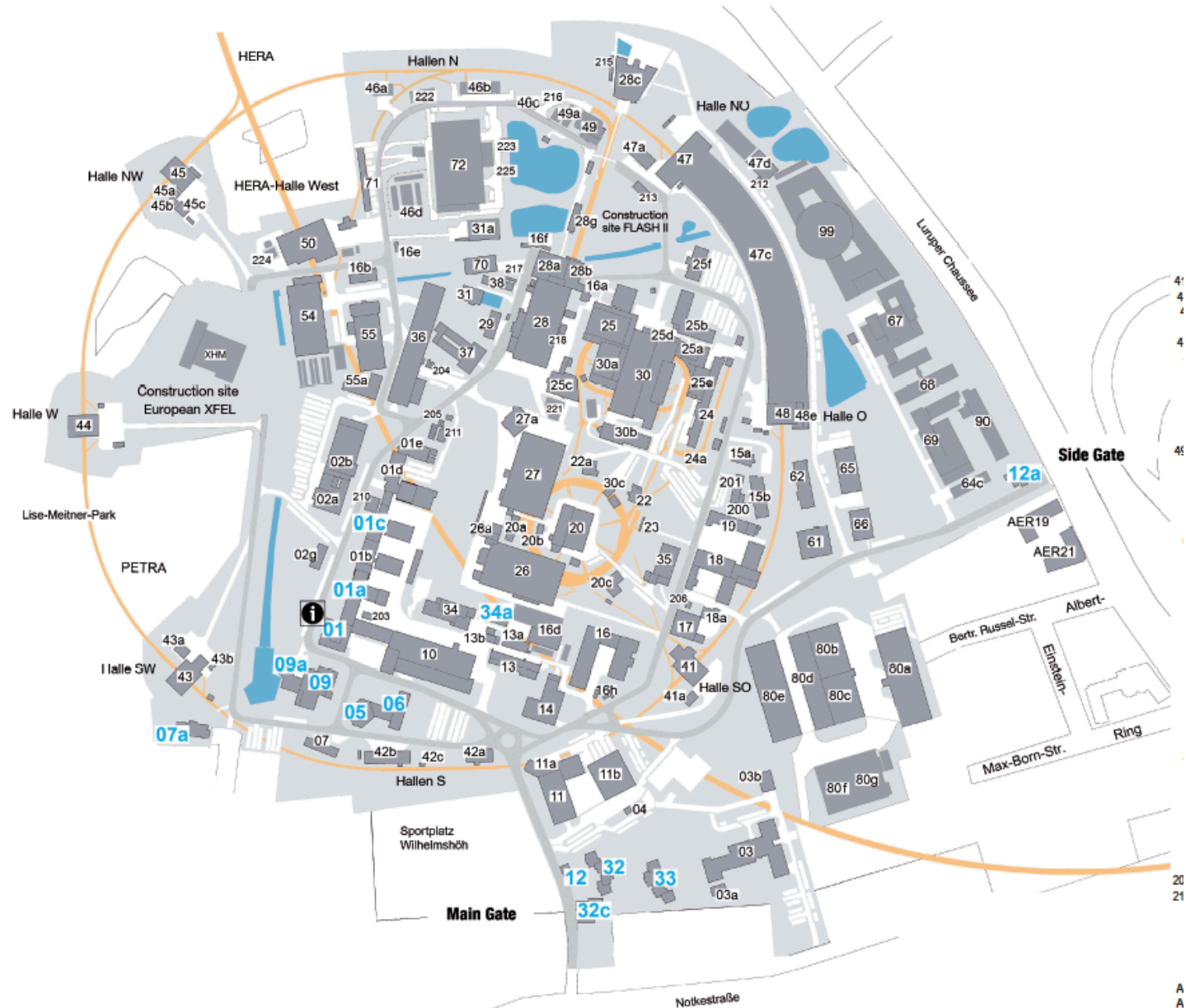
# DESY – OVERVIEW



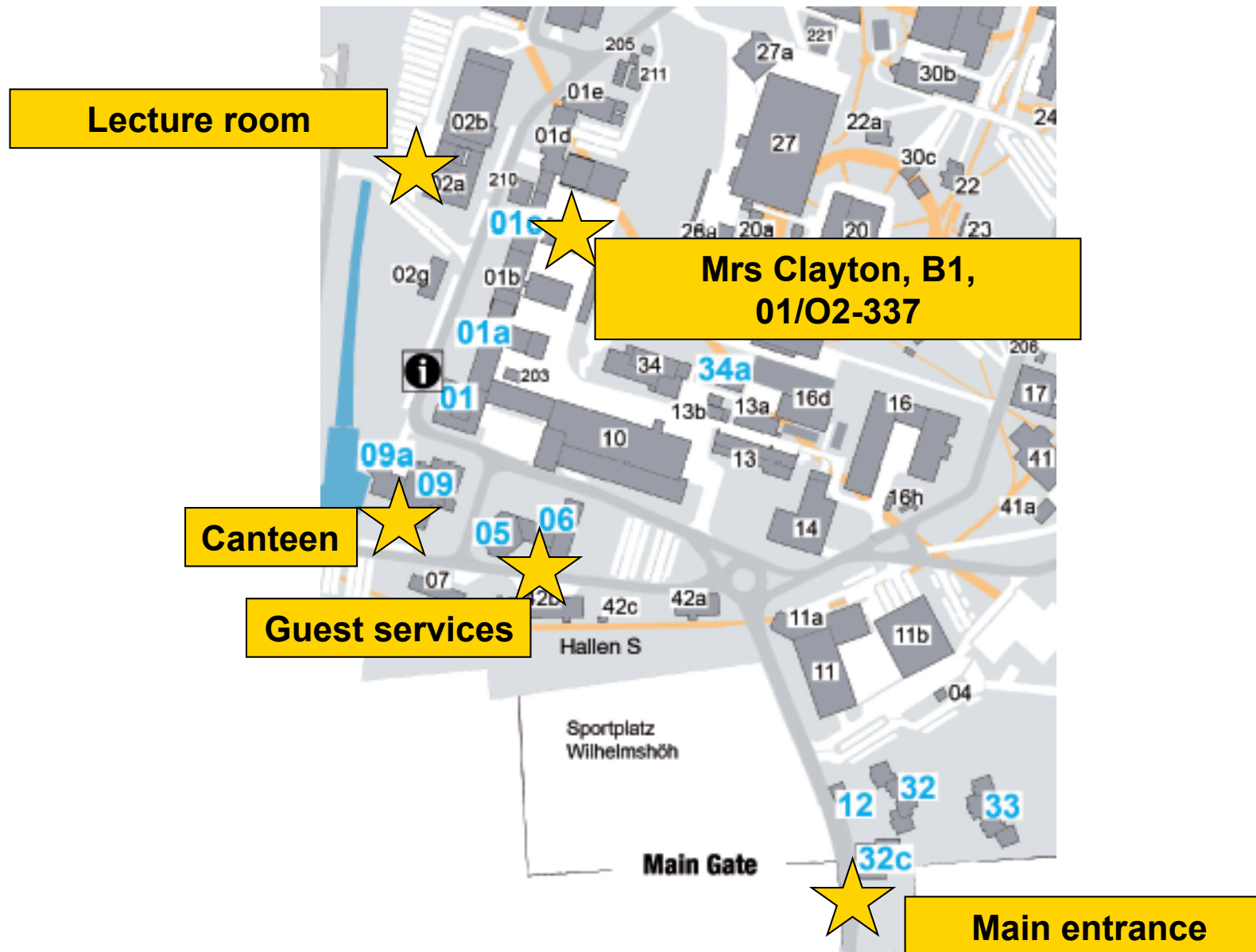
# DESY – OVERVIEW



# DESY – OVERVIEW



# DESY – OVERVIEW



# WHERE TO GO?

- > Sternschanze S-Bahn (local train) station and surroundings
  - > St. Georg (north of main station)
  - > Altona - Ottensen (west of the Altona station)
  - > Portuguese quarter (Landungsbrücken)
  - > University quarter (Dammtor, Grindel, ...)
  - > Eimsbüttel
  - > ...
- ➔ ask your local colleagues!



# THANKS TO ...

- > ... to your home institutes
  - ... for contributing to the budget and sending you here!
- > ... to DESY
  - ... for hosting us!
- > ... to the Helmholtz Alliance
  - ... for the money and the framework!
- > ... to all lecturers and tutors
  - ... for their immense work!
- > ... and finally to all people behind the scenery which are necessary to put things in place:
  - Secretaries (Mrs. Clayton, Mrs Price), technicians, DESY IT, ...

