

Detector Understanding

... with First LHC Data

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(for the Analysis Centre)

DESY Hamburg
29 June 2009

WELCOME ...

... to the workshop on “Detector Understanding with First LHC Data”!

- > Make everybody familiar with access to and handling of physics objects in the experiment-specific software environment.
- > Learn about the connected problems (efficiencies, resolutions, uncertainties, etc.)
- > Get a feeling for questions that have to be answered with first LHC data.
- > Opportunity to ask questions you always wanted to ask but never dared or never found the right person to address.
- > Get to know more people in similar situations
→ facilitate building of networks across the Alliance.



SCHOOLS AND WORKSHOPS

School on Fitting and Related Topics

PHYSICS AT THE TERASCALE
Helmholtz Alliance

30 March – 2 April 2009
DESY, Hamburg Site

Determining parameters from fits to data will be a crucial task in analyses of the upcoming LHC data. This school aims at providing education on this topic from a basic to the more advanced level.

Covered Topics:

- constant, straight line, parabola & others fits
- clever choices of parameters
- normal equations
- parameter errors and correlations
- fit quality and outlier rejections
- non-linear fits: signal peak(s) on background
- Poisson vs Gaussian statistics
- binned vs unbinned fits
- constraint fits
- (special) software tools
- nice physics examples

Organizing Committee: D. Behler (DESY), F. Elstner (Munich), M. Gerschlager (DESY), C. Heide (A. Kneipinger (Munich), B. Lind (Munich), R. W. M. W. (Munich), S. Schuler (DESY), A. Schuler (DESY), S. Schuler (DESY), T. Schuler (DESY), S. Schuler (DESY)

Registration deadline: 18 March 2009. Please register via the school webpage.

<http://www.terascale.de/fitting>

Monte Carlo School

PHYSICS AT THE TERASCALE
Helmholtz Alliance

20-24 April 2009,
DESY Hamburg

Topics:

- Monte Carlo techniques and standard physics (J. Grosse)
- Automated matrix element calculations (M. Grosse)
- Monte Carlo event generators
- PYTHIA 6 (J. Grosse)
- HERWIG (J. Grosse)
- SHERPA (J. Grosse)
- Exercises

The school covers Monte Carlo techniques and automated calculation of matrix elements. The focus of the school is on Monte Carlo event generators for simulation of processes beyond the standard model. The simulation of QCD and electroweak "background" will also be covered. In practical exercises, SM signal processes as well as standard model background will be

Workshop on Detector Understanding with First LHC Data

PHYSICS AT THE TERASCALE
Helmholtz Alliance

29 June - 3 July 2009,
DESY, Hamburg Site

Topics:

- Muon ID and reconstruction
- Jet and missing transverse energy
- Tau ID and reconstruction
- Electrons and photons
- Tracking, vertexing and b-tagging
- Trigger
- Alignment and calibration
- Hands-on exercises for object reconstruction

The workshop is aimed at PhD students and young postdocs who want to learn about the different physics objects, their reconstruction, and their usage in the experiments. The workshop will provide a comprehensive overview of the different physics objects, their reconstruction, and their usage in the experiments. The workshop will provide a comprehensive overview of the different physics objects, their reconstruction, and their usage in the experiments.

Registration deadline: 31.05.2009. Please register via the school webpage.

<http://www.terascale.de>

Workshop on Advanced Methods in Statistical Data Analysis

PHYSICS AT THE TERASCALE
Helmholtz Alliance

12-14 October 2009,
Karlsruhe University

Many searches for expected or unexpected new particles will be performed at the LHC. This workshop aims to provide help and education on some fields of statistics tools which are essential for such searches:

- separating signals and backgrounds using multivariate analysis techniques
- optimal searches, setting limits, making discoveries
- evaluating systematic uncertainties

It aims at PhD students and young Postdocs who have already gained some experience in statistical data analysis and are familiar with ROOT.

Registration deadline: 10 September 2009. Please register via the school webpage.

<http://www.terascale.de>

Monte Carlo School

PHYSICS AT THE TERASCALE
Strategic Helmholtz Alliance

21-24 April 2008,
DESY Hamburg

Topics:

- Monte Carlo techniques and physics (J. Grosse)
- NLO Calculations (J. Grosse)
- Monte Carlo event generators
- CASCADE (J. Grosse)
- HERWIG (J. Grosse)
- SHERPA (J. Grosse)
- Exercises (J. Grosse)

The school covers Monte Carlo techniques and applications in NLO calculations as well as full hadron level Monte Carlo event generators. Predictions coming from different generators will be compared in practical exercises and first steps for comparison with measurements will be shown in lectures.

Registration deadline: 15.03.2008. Please register via the school webpage.

<http://www.terascale.de/mcs2008>

School on Statistics Tools

PHYSICS AT THE TERASCALE
Strategic Helmholtz Alliance

29 September – 2 October 2008
DESY, Hamburg Site

Learn about statistical methods needed for the analysis of the LHC data. The program consists of primary lectures, special highlights and practical work on example problems in smaller groups.

Covered Topics:

- Optimal signal/background separation, multivariate techniques
- Searching for signals, discoveries, limits
- Advanced likelihood fit techniques
- Special practical problems, e.g. data corrections (unfolding), systematic errors

Invited Lecturers:
Volker Blobel
Glen Cowan
Lutz Dörmann
Markus Schumacher
Hagen Voss
Rainer Wöhr

Registration deadline: 10 September 2008. Please register via the school webpage.

<http://www.terascale.de/stat2008>



THANK YOU!

- > To the many people who helped to put this school in place.
- > To the organisation: M. Grimm, G. Steinbrück, W. Ehrenfeld, all the NAF staff, DESY IT and technicians, UHH IT, ...
- > To the lecturers!
- > To the tutors!
- > ... and, last but not least, to the Alliance for their financial support, and to DESY for hosting the event.



TIMETABLE

	Monday 29 June 2009	Tuesday 30 June 2009	Wednesday 01 July 2009	Thursday 02 July 2009	Friday 03 July 2009
AM	12:30 Lunch and registration(Registration in building 61)	09:00 Muon Detectors in ATLAS and CMS and Muon ID - <i>Alan Poppleton</i> (Lecture Hall building 61)	09:00 Tracking Detectors - <i>Katja Klein (RWTH Aachen)</i> (Lecture Hall building 61)	09:00 Electrons and photons - <i>Dirk Zerwas</i> (Lecture Hall building 61)	08:35 Minimum Bias Physics at the LHC - <i>Arthur Moraes</i> (Lecture Hall building 61)
		09:45 Muon alignment in ATLAS and CMS - <i>Pablo Martinez</i> (Lecture Hall building 61)	09:40 Tracking + Vertexing (1) - <i>Wolfgang Liebig</i> (Lecture Hall building 61)	10:30 --- Coffee ---	09:35 --- Coffee ---
		10:30 --- Coffee ---	10:20 --- Coffee break ---	11:00 Triggering at the LHC - <i>Rainer Stamen</i> (Lecture Hall building 61)	10:05 Physics with first data at the LHC - <i>Stefan Tapprogge (Johannes Gutenberg-Universität Mainz)</i> (Lecture Hall building 61)
		11:00 Jets and ETmiss - <i>Peter Loch</i> (Lecture Hall building 61)	10:40 Tracking + Vertexing (2) - <i>Wolfgang Liebig</i> (Lecture Hall building 61)	12:00 --- Lunch ---	11:05 Workshop Farewell - <i>Thomas Schoerner-Sadenius (DESY)</i> (Lecture Hall building 61)
		12:30 --- Lunch ---	11:20 B Tagging - <i>Christophe Saout</i> (Lecture Hall building 61)		
PM			12:30 --- Lunch ---		
	14:00 Introduction to the workshop - <i>Thomas Schoerner-Sadenius (DESY)</i> (Lecture Hall building 61)	14:00 Tutorial: Muons (CMS) - <i>Riccardo Bellan</i> (68/125)	14:00 Tutorial: Tracking 1 (ATLAS) - <i>Wolfgang Liebig</i> (28 (Flash hall)) TWIKI	13:00 Tutorial: electrons, photons (ATLAS) - <i>Jochen Hartert</i> (28 (Flash hall)) TWIKI	
	14:30 The first 100 days of the Tevatron - <i>Wolfgang Wagner (Karlsruher Institut für Technologie (KIT))</i> (Lecture Hall building 61)	14:00 Tutorial: Muons (ATLAS) - <i>Niels van Egidk</i> (28 (Flash hall)) TWIKI	14:00 Tutorial: Tracking 1 (CMS) - <i>Christophe Saout</i> (68/125)	13:00 Tutorial: electrons, photons (CMS) - <i>Roger Wolf (CMS Univ. Hamburg)</i> (68/125)	
	15:30 --- Coffee ---	15:30 --- Coffee ---	15:30 Tutorial: Tracking 2 (CMS) - <i>Christophe Saout</i> (68/125)	14:45 --- Coffee ---	
	16:00 Computer: Getting started (CMS) - <i>Isabell-A. Meizer-Pellmann (DESY)</i> (Building 68/125)	16:00 Tutorial: Jets and ETmiss (ATLAS) - <i>Sven Menke</i> (28 (Flash hall)) TWIKI	15:30 Tutorial: Tracking 2 (ATLAS) - <i>Wolfgang Liebig</i> (28 (Flash hall))	15:05 Tutorial: Tau (ATLAS) - <i>Bjoern Gosdzik</i> (28 (Flash hall)) TWIKI	
	16:00 Computer: Getting started (ATLAS) - <i>Wolfgang Ehrenfeld (DESY)</i> (28 (Flash hall))	16:00 Tutorial: Jets and ETmiss (CMS) - <i>Isabell-A. Meizer-Pellmann (DESY)</i> <i>Benedikt Hegner (DESY)</i> (68/125)	16:30 --- Coffee ---	15:05 Tutorial: Tau (CMS) - <i>Christian Voelken</i> (68/125)	
	18:00 --- Welcome Reception ---		17:00 Tau ID - <i>Stan Lai</i> (Lecture Hall building 61)	16:35 Tutorial: Trigger (ATLAS) - <i>Joerg Steitzer</i> (28 (Flash hall)) TWIKI	
				16:35 Tutorial: Trigger (CMS) - <i>Volker Adler (Vrije Universiteit Brussel (VUB))</i> (68/125)	
				19:30 School Dinner- <i>Thomas Schoerner-Sadenius (DESY)</i> (until 22:00)	

ADDITIONAL INFORMATION

- > WLAN: SSID detector09, password DEtector!2009!?
- > Tonight: Welcome reception in DESY canteen appendix (start around 18:30 p.m.).
- > Thursday night: School Dinner in DESY canteen appendix (start around 18:00 p.m.).
- > In case of questions or problems: Please ask any of the organisers or tutors – they will point you to the correct person.
- > Feedback questionnaires will be handed out on Friday morning. Please return them to the organisers – your input is important to us!



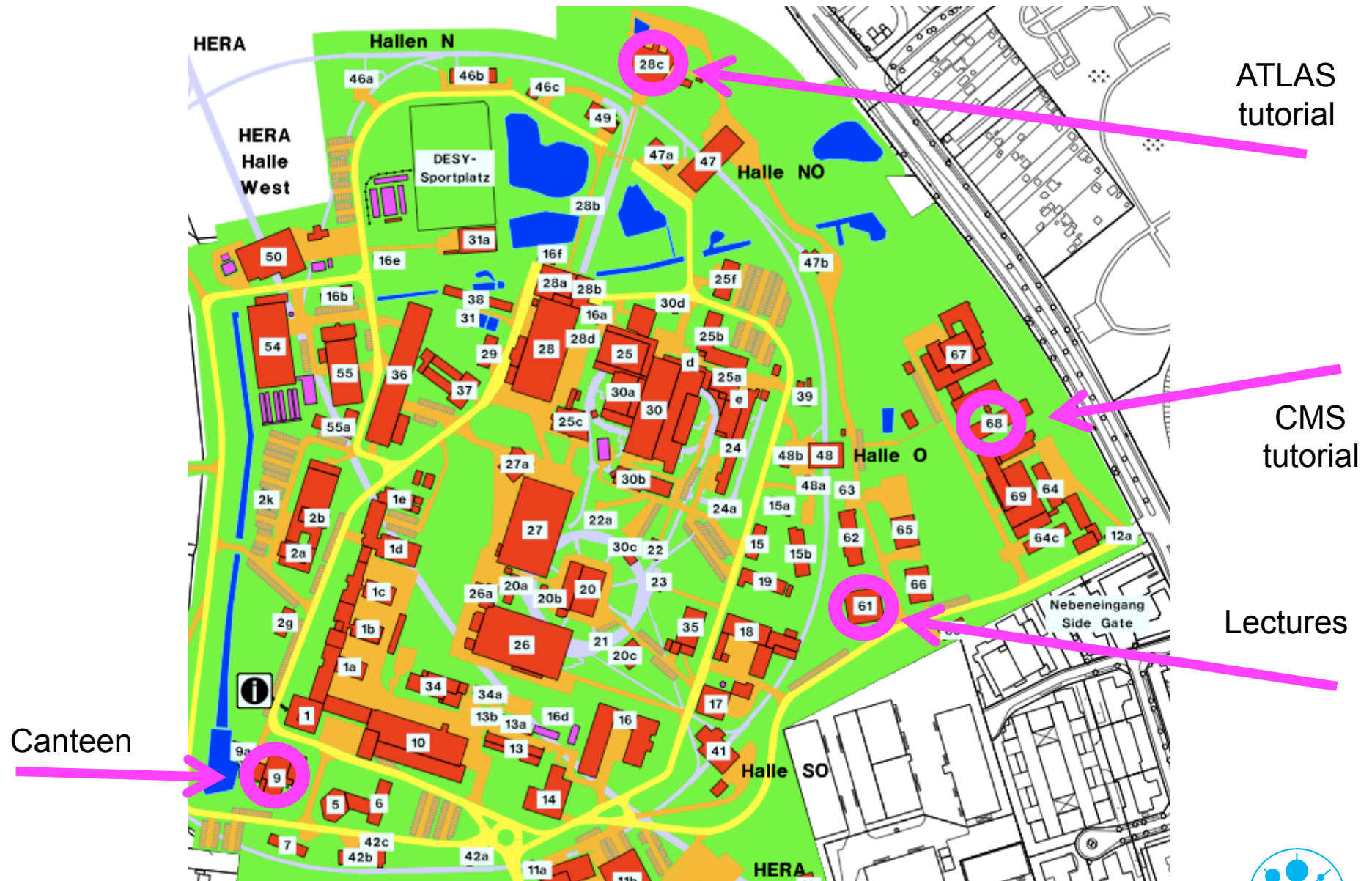
TUTORIALS

- > A big adventure!
- > CMS: 68 / 125 (map)
- > ATLAS: SR 28 (map)
- > LAN: some outlets available in the tutorial rooms
- > For those without own laptop: School PCs available; please read the hand-outs for instructions.
- > NAF access and setup of ATLAS / CMS software: will be discussed in the introductory sessions after Wolfgang's presentation.
- > Sufficient expertise available to solve technical problems.

For users of the PCs: Please don't switch off – just log out!



DESY MAP



... AND NOW ...

... hop along, learn a lot, and have fun!

