

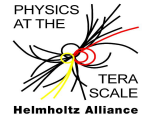
German LHC Physics School

Welcome remarks

Helmholtz Alliance

PHYSICS AT THE TERASCALE

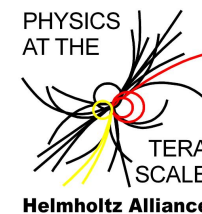
Deutsches Elektronen-Synchrotron DESY *** Forschungszentrum Karlsruhe GmbH *** Max-Planck-Institut für Physik München *** Rheinisch-Westfälische Technische Hochschule Aachen
*** Hamburg-Universität Berlin *** Rheinische Friedrich-Wilhelms-Universität Bonn *** Universität Dortmund *** Technische Universität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



Thomas Schörner-Sadenius



DESY Hamburg
27 September 2010



WELCOME

- > ... to the (first) German LHC Physics School
 - organised in the framework of the Helmholtz Alliance.
- > A week of lectures, lively discussions, hands-on tutorials and social contacts for everybody wanting to get (more) familiar with LHC physics and experimental methods.
- > First in a series → we need your input and feedback to improve and make an even better offer to the community next year.
 - 2009: “Detector Understanding with First LHC Data” – slightly different focus, but we nevertheless learned a few lessons.
- > Topic “Final states with leptons and/or jets” because
 - ... covers basic object reconstruction
 - ... is important for Standard Model measurements
 - ... is equally important for the more exciting things to come (top, SUSY, BSM ...)



THE SCHOOL

> Monday:

- Introductory lectures on the “Physics landscape” at the onset of the LHC era, on the detector performances and on LHC results.
- Evening reception at 19:00 in the bistro / canteen appendix.

> Tuesday – Thursday:

- Topical presentations on leptons, jets and lepton+jets final states and techniques.
- Discussion
- Tutorials in the afternoons (next slide).
- Tuesday: Evening talk by H.-F. Wagner (BMBF) on HEP funding!
- Thursday: School dinner, 19:00, bistro / canteen appendix.

> Friday

- Lectures on status of theory and on the plans and prospects for the LHC machine.
- School wrap-up and feedback session.

Personal request: please leave your laptops off during the lectures!



THE TUTORIALS

- > Separately for CMS and ATLAS!
- > CMS: Here in seminar room 2.
- > ATLAS: In seminar room 52 (ground floor) of university building 69 (Institute for Laser Physics).
 - Problem or challenge: Not in DESY domain – we have to arrange ourselves with different network connections. Information there and then.
- > Computer set-up session today at 17:00 – please take seriously!
 - Hope to sort out all remaining issues to make you able for productive work tomorrow.
- > We did not manage to equip all of you with Grid / NAF certificates in time. Therefore in some cases pairs of participants have to work together in front of one computer.
 - Please be so kind to offer your assistance to your fellow participants.
 - Somebody with certificate but no laptop?



AGENDA

	Monday 27 September 2010	Tuesday 28 September 2010	Wednesday 29 September 2010	Thursday 30 September 2010	Friday 01 October 2010
AM		09:00 Leptons- Johannes Haller (<i>Uni Hamburg</i>) (until 13:00)	09:00 Jets- Peter Schleper (<i>Uni Hamburg</i>) (until 13:00)	09:00 Leptons and Jets- Ottmar Blebel (<i>LMU Muenchen</i>) (until 13:00)	09:30 Outlook (until 13:00)
		09:00 Reconstruction, Identification, Isolation - Ingo Bloch (<i>FNAL</i>) Outline	09:00 Reconstruction and Particle Flow - Philipp Schieferdecker (<i>KIT</i>)	09:00 Lepton+jets events: trigger, selection, reconstruction - Roger Wolf (<i>Hamburg</i>)	09:30 Machine Status and Prospects - Helmut Burkhardt (<i>CERN</i>)
		09:45 Trigger, Efficiency, Purity - Martin Wessels (<i>U Heidelberg</i>) Outline	10:00 --- coffee break ---	09:45 Measurement of W,Z cross sections: techniques, uncertainties, results - Roger Wolf (<i>CMS Univ. Hamburg</i>)	10:15 Theory - Peter Uwer (<i>Humboldt-Universität zu Berlin</i>)
		10:30 --- coffee break ---	10:30 Hadron und Jet Calibration - Konstantinos Kousouris (<i>FNAL</i>)	10:30 --- coffee break ---	11:00 --- coffee break ---
		11:00 Calibration, Resolution - Rainer Mankel (<i>DESY</i>) Outline	11:30 Physics Cases - Thomas Nunnemann (<i>LMU</i>)	11:00 Estimating background to top physics from data (QCD, W+jets, Z+jets) - Markus Cristinziani (<i>Uni Bonn</i>)	11:30 Discussion, Conclusions
		11:45 Physics Cases - Karsten Koeneke (<i>CERN</i>)	12:30 Discussion	11:45 Measurement of top cross sections (selection, techniques, uncertainties, results) - Markus Cristinziani (<i>Uni Bonn</i>)	12:15 Evaluation and Adjourn
		12:30 Discussion		12:30 Discussion	
PM	13:00 Registration (until 14:00)	13:00 --- lunch break ---	13:00 --- lunch break ---	13:00 --- lunch break ---	
	14:00 Introductions (until 16:45)	14:30 Tutorial (Leptons) (until 17:30)	14:30 Tutorial (Jets) (until 17:30)	14:30 Tutorial (Leptons + Jets) (until 17:30)	
	14:00 Physics Landscape - Beate Heinemann (<i>LBL</i>)	19:30 Evening Lecture (until 21:00)		19:00 Dinner (until 21:00)	
	14:45 --- coffee break ---	19:30 Competition for large scale research facilities - H.-F. Wagner			
	15:15 LHC Detector Status - Wolfram Zeuner (<i>CERN</i>)				
	16:00 LHC Results so far - Thomas Muller (<i>KIT</i>)				
	17:00 Computer Setup (until 18:00)				
	19:00 Reception (until 20:00)				

ORGANISATIONAL DETAILS

- > In each session, one member of the organising team will be around.
 - Don't hesitate to ask in case of questions or problems.
- > In urgent cases ;-): 3100 or 3429.
- > There will be one coffee break in the morning and in the afternoon.
- > At the end of the school (Friday) we will ask for your feedback and opinion on the organisation and the contents of the school.
 - Please help us to improve!
- > WLAN is provided in all relevant rooms:
 - SR 2 and all DESY:
 - University building: special personalised accounts will be handed out. (Detail: automatic logout after 2 hours.)



WLAN Access

German LHC Physics School 2010

27 September – 1 October 2010

WLAN name:

Physics 2010

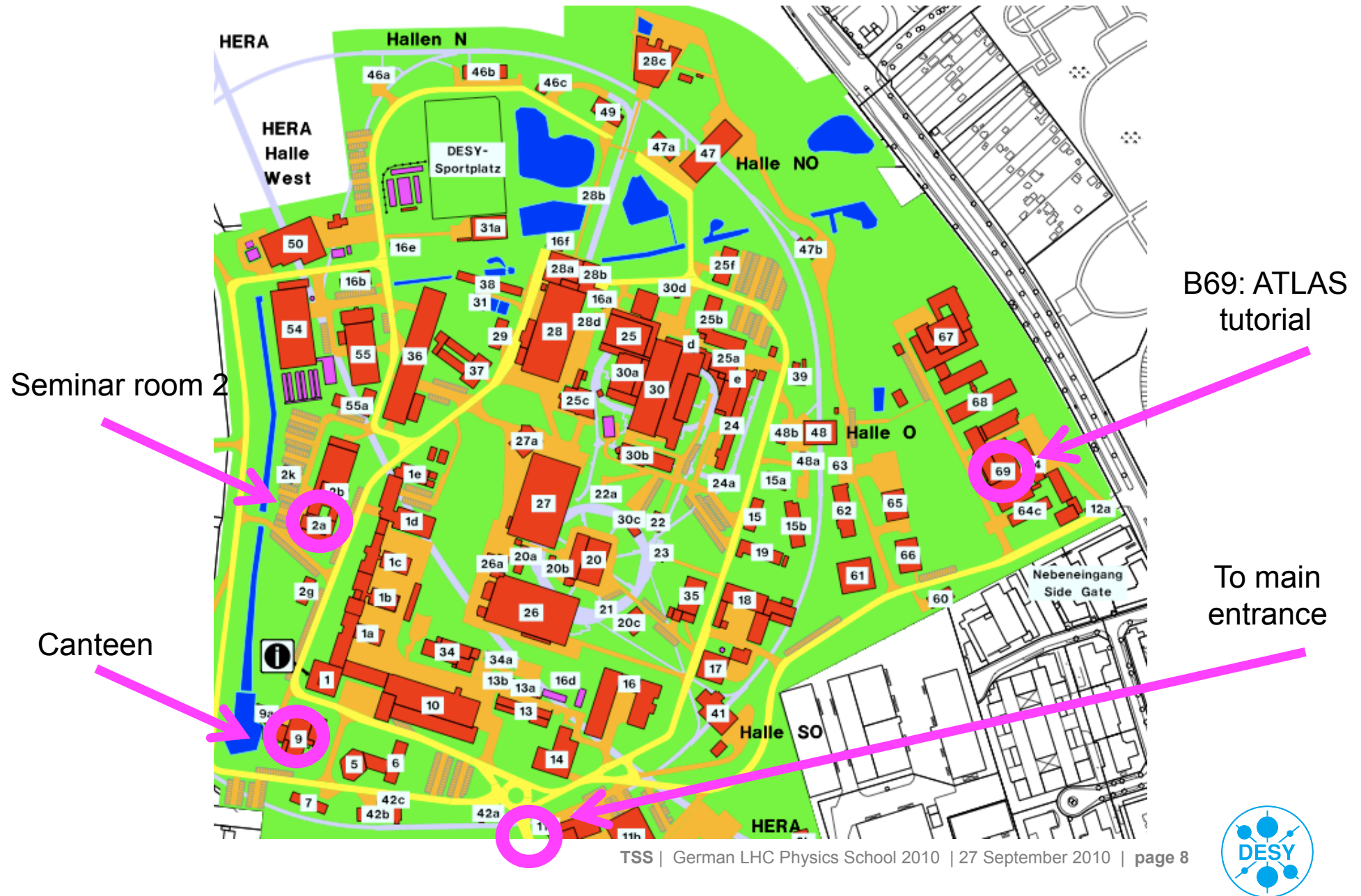
Access key:

AWa!V6h?4k

(Different for ATLAS participants in building 69 → see there)



MAP OF DESY

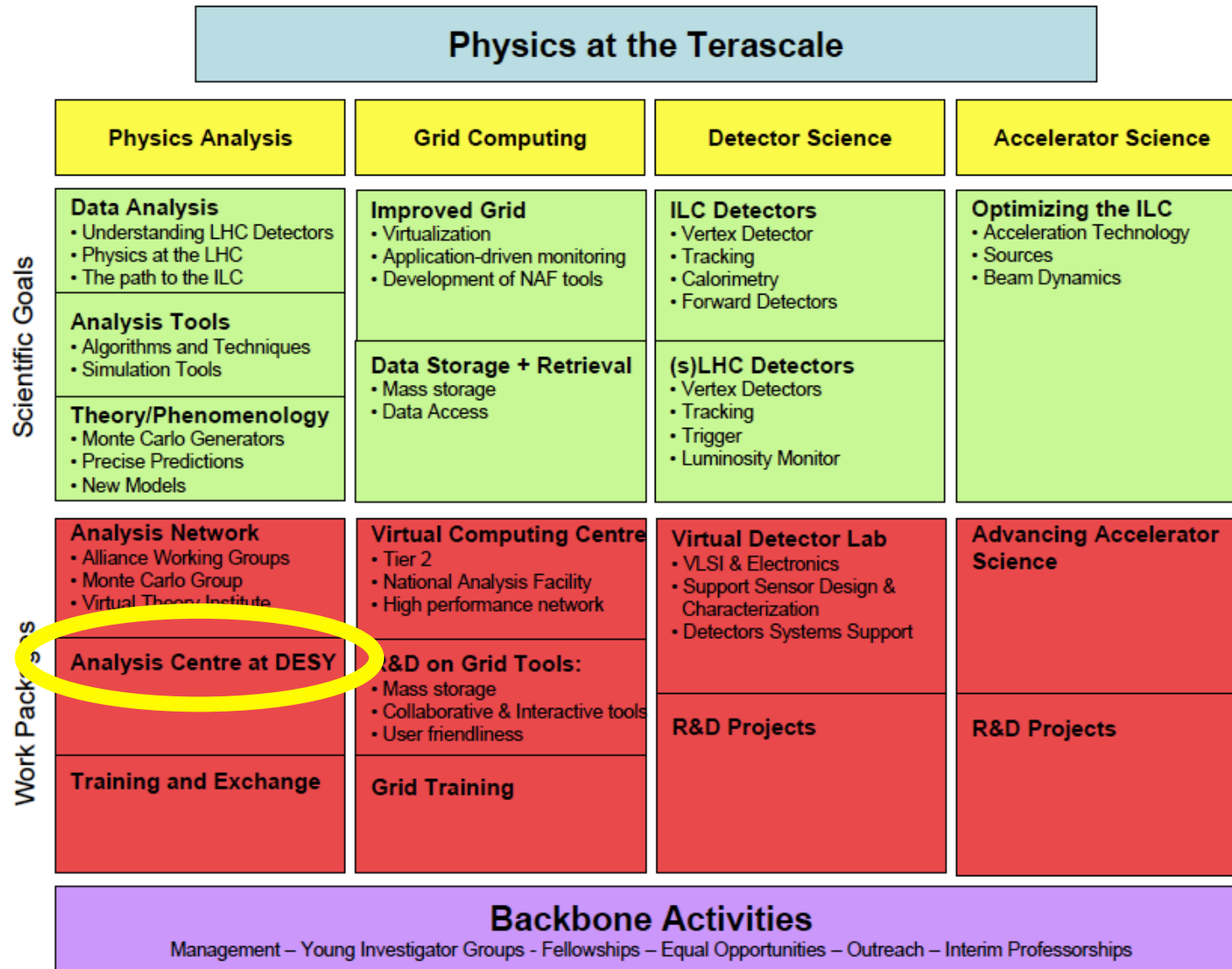


THANKS TO ...

- > All our lecturers!
- > All people contributing to the tutorials.
- > The organising team.
- > The NAF support.
- > Michaela Grimm for her invaluable help in the organisation before and during the school.
- > The Helmholtz Alliance for funding.
- > You – for attending and making this event a success ;-)



ALLIANCE “PHYSICS AT THE TERASCALE”



MISSION OF THE ANALYSIS CENTRE

The mission of the Analysis Centre is to enhance the physics potential of the German LHC / ILC community by providing analysis infrastructure and by supporting analysis-related issues of general relevance.

- > **Education and training** (schools, workshops, documentation, ...).
- > **Basic research, tools development** and user support in central fields.
 - Software, algorithms, methods, papers, talks, ...
- > LHC / ILC **analysis support** (to be developed).
- > **Networking**.
- > Fields of general relevance → three **dedicated working groups**:
 - Monte Carlo generators (MC), + SUSY / BSM parameter fitting
 - Parton Distribution Functions (PDFs), and
 - Statistics Tools.
 - Needed by everybody at LHC, building on large HERA/DESY expertise, experiment independent!



EDUCATION AND TRAINING

School on **Parton Distribution Functions**

PHYSICS AT THE TERASCALE
Strategic Helmholtz Alliance

12-14 November 2008,
DESY, Zeuthen



The PDF school covers hard scattering in the experimental side. Emphasis is put on and their impact on predictions and reanalysis. The lectures are targeted at PhD students.

The school fee of Euro 25 has been waived.
Registration deadline: 10 September 2008
Organising Committee: J. Blumlein, M. Glöckner, C. Kleinwort, S. Schmitt
Please register via the school webpage.
<http://www.terascale.de/pdf2008>

Monte Carlo School

PHYSICS AT THE TERASCALE
Strategic Helmholtz Alliance

21-24 April 2008,
DESY Hamburg




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, BSM signal processes as well as standard model background will be simulated and analyzed.

Registration deadline: 31.03.2009
Please register via the school webpage.
<http://www.terascale.de/mcs2009>

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.

Organising Committee: J. Blumlein (DESY), A. Glazov (DESY), S.-O. Moch (DESY), T. Schömer-Sadenius (DESY), M. Z. Nagy, T. Schömer-Sadenius
Please register via the workshop webpage.
<https://indico.desy.de/conferenceDisplay.py?confId=2161>

Workshop on **Detector Understanding with First LHC Data**

PHYSICS AT THE TERASCALE
Helmholtz Alliance

29 June - 3 July 2009,
DESY, Hamburg Site



Topics:


- General formalism to describe and represent the parton shower as an integral equation
- Deriving the summation of some important physical observables (such as the Drell-Yan p_T distribution) in a given shower model
- General strategy to get the summation of large logs from the shower equation
- Studying and comparing shower models (angular ordered, color dipole, CCFM) and implementations (Herwig, Sherpa, Ariadne, Pythia, CS-dipole shower, Cascade)
- Matching of parton showers to LO, NLO and resummation
- Numerical comparisons focusing on large logarithms and parton level only (no hadronization, no tuning)
- Related topics

Organising Committee: H. Jung, Z. Nagy, T. Schömer-Sadenius
Please register via the institute webpage.
For further information please contact: Zoltan.Nagy@desy.de
<http://www.terascale.de/psri09/>

Monte Carlo School

PHYSICS AT THE TERASCALE
Helmholtz Alliance

20-24 April 2009,
DESY Hamburg



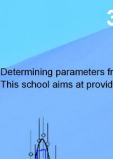
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Registration deadline: 31.03.2009
Please register via the school webpage.
<http://www.terascale.de/mcs2009>

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

Organising Committee: O. Behnke (DESY), F. Klinghans (Munich), M. Goebel (DESY), C. Henkel (Goettingen), C. Kleinwort (DESY), K. Krüninger (Goettingen), B. List (Hamburg), B. Muir (Hamburg), I. Rubinsky (DESY), C. Sander (Hamburg), A. Schaeck (DESY), S. Schmitt (DESY), T. Schömer-Sadenius (DESY), G. Schott (Karlsruhe), D. Töpor (Karlsruhe)
Registration deadline: 10 March 2009
Please register via the school webpage.
<http://www.terascale.de/fitting2009>

Institute on **Parton Shower and Resummation**

PHYSICS AT THE TERASCALE
Helmholtz Alliance

4 - 29 May 2009,
DESY, Hamburg Site



Topics to discuss:


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- Deriving the summation of some important physical observables (such as the Drell-Yan p_T distribution) in a given shower model
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- Related topics

Organising Committee: H. Jung, Z. Nagy, T. Schömer-Sadenius
Please register via the institute webpage.
For further information please contact: Zoltan.Nagy@desy.de
<http://www.terascale.de/psri09/>

Statistical Data Analysis

PHYSICS AT THE TERASCALE
Helmholtz Alliance

12-14 October 2009,
Karlsruhe University



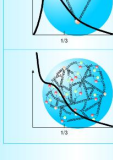
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Monte Carlo School

PHYSICS AT THE TERASCALE
Helmholtz Alliance

20-24 April 2009,
DESY Hamburg



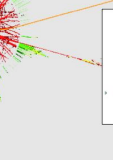
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NOW ...

... have a nice and productive week with many interesting lectures and discussions.

