Welcome

MC Methods in Advanced Statistics Applications and Data Analysis

Thomas Schörner-Sadenius

18 November 2013

HELMHOLTZ GEMEINSCHAFT

DESY

A FIRST-TIMER …

PHYSICS AT THE TERA SCALE

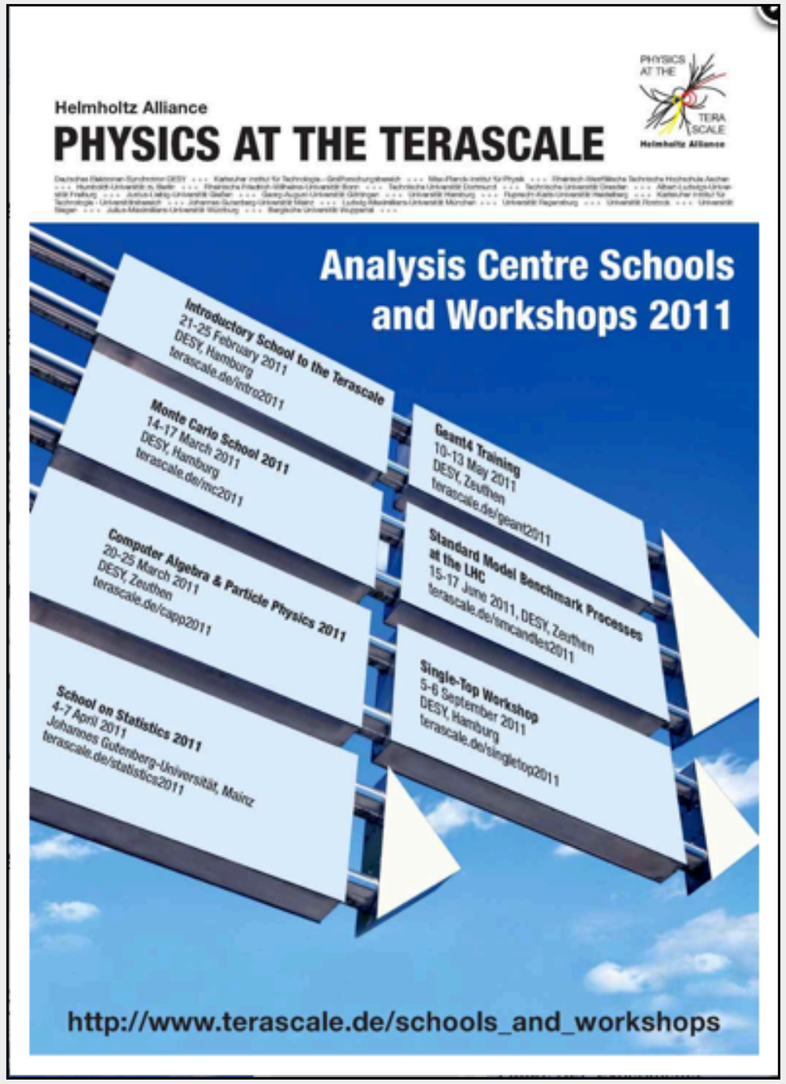
Helmholtz Alliance

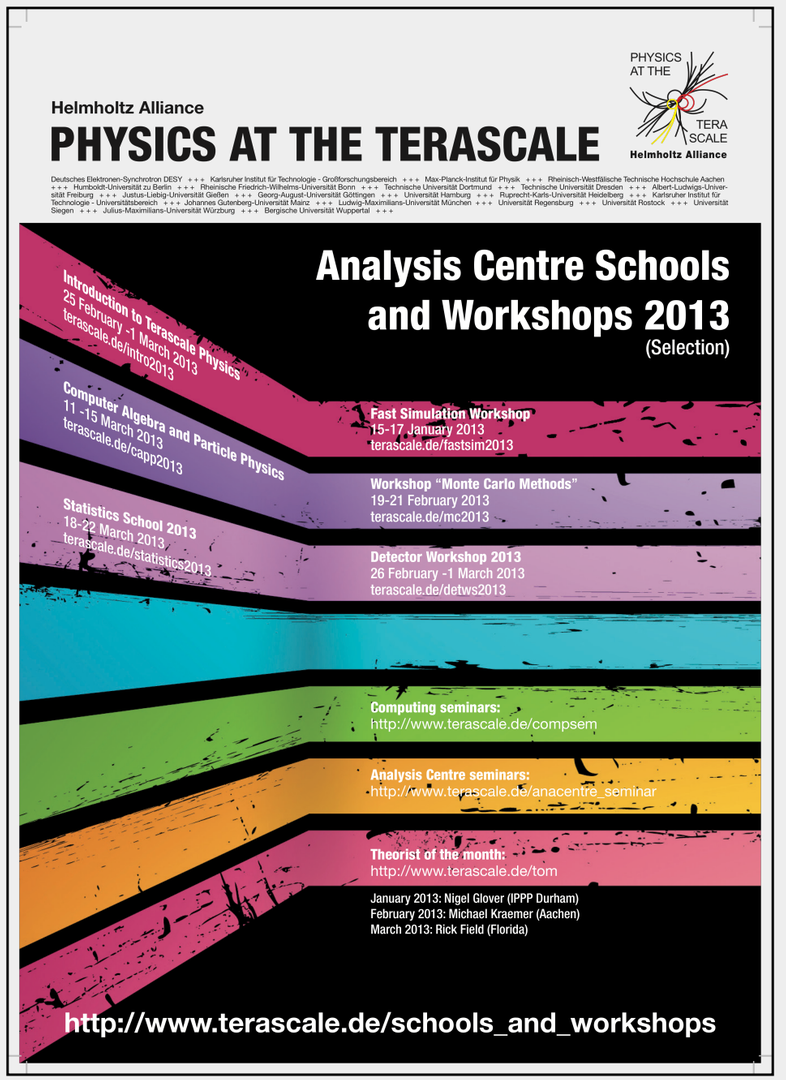
Helmholtz-Allianz für Astroteilchenphysik (HAP)

EMMI

DESY

BACKGROUND


Helmholtz Alliance
PHYSICS AT THE TERASCALE
PHYSICS AT THE TERA SCALE
Helmholtz Alliance
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/smcandles2011
Single-Top Workshop
5-6 September 2011
DESY, Hamburg
terascale.de/singletop2011
http://www.terascale.de/schools_and_workshops


Helmholtz Alliance
PHYSICS AT THE TERASCALE
PHYSICS AT THE TERA SCALE
Helmholtz Alliance
Analysis Centre Schools and Workshops 2013
(Selection)
Introduction to Terascale Physics
25 February -1 March 2013
terascale.de/intro2013
Computer Algebra and Particle Physics
11 -15 March 2013
terascale.de/capp2013
Statistics School 2013
18-22 March 2013
terascale.de/statistics2013
Fast Simulation Workshop
15-17 January 2013
terascale.de/fastsim2013
Workshop "Monte Carlo Methods"
19-21 February 2013
terascale.de/mc2013
Detector Workshop 2013
26 February -1 March 2013
terascale.de/detws2013
Computing seminars:
http://www.terascale.de/compsem
Analysis Centre seminars:
http://www.terascale.de/anacentre_seminar
Theorist of the month:
http://www.terascale.de/tom
January 2013: Nigel Glover (IPPP Durham)
February 2013: Michael Kraemer (Aachen)
March 2013: Rick Field (Florida)
http://www.terascale.de/schools_and_workshops

TIMETABLE

Monte Carlo Methods in Advanced Statistics Applications and Data Analysis
from **Monday 18 November 2013 (08:00)** to **Friday 22 November 2013 (18:00)**

: Sessions / : Talks : Breaks

	Monday 18 November 2013		Tuesday 19 November 2013		Wednesday 20 November 2013		Thursday 21 November 2013		Friday 22 November 2013	
AM	09:00	Registration	09:00	Basics 4: Information field theory - from data to images (lecture) - Torsten Ensslin (MPA) Slides	09:00	Markov chain Monte Carlo 1 - Remi Bardenet (Oxford)	09:00	Basic sampling methods, convergence, variance reduction - and connections to MC event generators - Stefan Gieseke (KIT)	09:00	Population MC 1 - Frederic Beaujean (MPI Munich)
	10:30	Basics 1: Basis of statistics, probability etc. - Allen Caldwell (Max Planck Institute)	10:30	--- Coffee break ---	10:30	--- Coffee break ---	10:30	--- Coffee break ---	10:30	--- Coffee break ---
	12:30	--- Lunch break ---	11:00	NIFTY: Numerical information field theory - Marco Selig (MPA Garching) Slides	11:00	Markov chain Monte Carlo 2 - Ralf Ulrich (KIT) Remi Bardenet (Oxford)	11:00	Exercises on MC sampling - Allen Caldwell (Max Planck Institute)	11:00	Population MC 2 - Frederic Beaujean (MPI Munich)
			12:30	--- Lunch break ---	12:30	--- Lunch break ---	12:30	--- Lunch break ---	12:30	--- Lunch break ---
PM	14:00	Basics 2: Random numbers, distributions etc. - Allen Caldwell (Max Planck Institute)	14:00	Bayesian mixture modelling - Fabrizia Guglielmetti (MPE Garching)	14:00	BAT - a complex Markov chain Monte Carlo application - Kevin Kroeninger (University of Goettingen)	14:00	Nested sampling - Udo v. Toussaint (IPP Garching)	14:00	Q&A session
	15:30	--- Coffee break ---	15:45	--- Coffee break ---	16:00	--- Coffe break ---	16:00	--- Coffee break ---		
	16:00	Basics 3: Logic, information and Bayesian reasoning (lecture) - Torsten Ensslin (MPA)	16:15	Multivariate analysis - Balazs Kegl (LAL, Orsay)	16:30	The STAN package: Bayesian Inference based on Hamiltonian Monte Carlo - Michael Betancourt	16:30	Nested sampling using PyMultiNest - Johannes Buchner (MPE Garching)		
	18:30	--- Welcome reception ---					18:30	--- School dinner ---		

TUTORIALS, PRACTICAL PARTS

- All you need is
  - A laptop ;-)
- For those who do not have a laptop
  - You are expected to work in pairs or triples – much more effective!
- Working on NAF 2.0 at DESY with personalised accounts
  - Have been handed out during registration.
  - Login instructions on the INDICO page
  - Tutors should let you know where the relevant code for their exercises is.
- WLAN information has been handed out!

ORGANISATIONAL DETAILS

- Reception tonight!
- Lunch breaks: Canteen! Lunch vouchers have been given out at the registration.
  - Please note that in order to avoid chaos in the canteen, morning sessions should go until 12:40 at least, irrespective of the INDICO timetable.
- School dinner: Thursday evening
- Q&A session on Friday – I hope that some of the lecturers can still be around!
- We will hand out feedback questionnaires on Friday – please fill them out and give them back to the organisers → your input is vital for improving the concept!

THANKS!

- To MPI for hosting this interesting (and exciting!) event. Specifically to Allen and Frank for their kind help in putting everything together!
- To your home institutes for their support and funding.
- To the HGF alliances and the MPI IMPRS for their financial support.
- To all the lecturers and tutors for their immense work in putting together their presentations and exercises.
- To you – for your interest and participation.
  - The success of the school also depends on your contribution – your questions, comments, criticism.