

# MC school

- **Organising Committee:**

H. Jung, J. Katzy, A. Knutsson,  
K. Kutak, S. Levonian and help  
from M. Grimm

web page:

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

- already now: 81 registrations....
- still people ask to participate ...  
can we accept a few more ?
- Network:

für die Veranstaltung wird ein eigenes Gästernetz eingerichtet. Dieses Netz wird eine eigene SSID bekommen. Wenn das Netz eingerichtet ist, geben wir diese SSID heraus. Das wird ca. 1 Woche vor der Veranstaltung sein, damit noch Zeit zum Testen ist.

The poster features a background image of a large, circular particle detector, likely the ATLAS detector at CERN, with a complex network of pipes and structural elements. In the foreground, there are stacks of white and black chips, possibly poker chips, arranged in a circular pattern. The text is overlaid on this background.

**PHYSICS AT THE TERA SCALE**  
Strategic Helmholtz Alliance

**Monte Carlo School**

**21-24 April 2008,  
DESY Hamburg**

**Topics:**

- Monte Carlo techniques and physics (L. Lönnblad)
- NLO Calculations (NN)
- NLO and parton showers (M. Dinsdale)
- Monte Carlo event generators
  - CASCADE (H. Jung)
  - HERWIG (S. Gieseke, P. Richardson)
  - PYTHIA (T. Sjöstrand)
  - SHERPA (F. Krauss)
- Exercises (L. Sonnenschein et al.)

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 tutorials.

Registration deadline: 15.03.2008  
Please register via the school webpage.

Organising Committee: Hannes Jung, J. Katzy, A. Knutson, K. Kutak, Serguei Levonian

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PHYSICS AT THE TERA SCALE Helmholtz Alliance

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# MC school

## Monday

morning: arrival  
14:00 – 15:00 Monte Carlo techniques and physics 1 (L. Lonnblad)  
15:00 – 15:30 Coffee  
15:30 – 16:30 NLO Calculations (Z. Merebashvili)  
16:30 – 17:30 Monte Carlo techniques and physics 2 (L. Lonnblad)

## Tuesday

09:00 – 10:00 Monte Carlo techniques and physics 3 (L. Lonnblad)  
10:00 – 10:30 CASCADE H. Jung  
10:30 – 11:00 PYTHIA T. Sjostrand  
11:00 – 11:30 Coffee  
11:30 – 12:00 HERWIG S. Gieseke  
12:00 – 12:30 SHERPA S. Schumann

14:00 – 15:30 Exercises and practical work  
15:30 – 16:00 coffee  
16:00 – 18:00 Exercisers and practical work

## Wednesday:

09:00 – 09:45 MC and NLO (M. Dinsdale)  
09:45 – 10:30 Minimum bias/underlying event physics with PYTHIA (T. Sjostrand)  
10:30 – 11:00 Coffee  
11:00 – 11:45 Spin Correlations with HERWIG (P. Richardson, S. Gieseke)  
11:45 – 12:30 Multijet matching (NN)

14:00 – 15:30 Exercises and practical work  
15:30 – 16:00 coffee  
16:00 – 18:00 RIVET

## Thursday:

09:00 – 10:00 Parameter fitting and PDF4MC (H. Hoeth, A. Knutsson, K. Kutak, )  
10:30 – 11:00 Coffee  
11:00 – 12:30 Presentation of comparison of MC generators (all)  
End of school

# Exercises

- intro to GENSER and HEPMC (only the very essentials, to get started)

- produce executables for the generators

- run  $t\bar{t}$  production at LHC

  - explain output

  - how to extract infos

  - fill ROOT tree with HEPMC

  - plot:

  - pt and eta of top quark, and compare it with decay products

  - charged particle multiplicity in central region for top events

    - also as function of energy deposit in fwd region

  - calculate pt of  $t\bar{t}$  pair

  - studies:

  - effect of initial & final state PS on pt of  $t\bar{t}$  pair

  - effect of initial & final state PS on charged particle multiplicity

  - effect of multiple interactions

- run Higgs production at LHC

  - plot pt of Higgs

  - effect of initial and final state PS

  - "jet" (high pt parton) multiplicity

- RIVET

  - intro

  - run underlying event analysis for Tevatron energies and compare it with MC predictions

- generator specific studies

  - ???

# Exercises ...

- proposal created some confusion in MCnet ...
  - do not like to interface with big programs ...
  - need to make clear that:
    - using HEPMC is just for the event record
    - using ROOT is just for plotting
  - from our side:
    - important that we have a common frame for the generators
    - do not want to learn plotting package for each generator
    - do not want to learn (at this stage) all the internal generator structures like event records, C++ issues etc ...
- Monday afternoon (31. March):
  - telephone meeting with MC authors to plan and discuss exercises

# MC school & Exercises

- Need support for the exercises:
  - 4 Wgs with ca 20 persons
  - 4 WGs (PYTHIA, HERWIG, SHERPA, CASCADE)
  - need 3 person/WG for technical support ... 12 persons in total
- Need support from IT for accounts
  - NAF accounts
  - normal afs accounts
- Week: 14-18. April (just before MC school)
  - build executables and test exercises
  - complete and extensive test of exercises
  - please help all...

# MC school - AOB

- Dinner/welcome reception
  - strong advice from management:  
only have either welcome reception or dinner  
When ?

