



© 1972 United Feature Syndicate, Inc.

Copyright © 2002 United Feature Syndicate, Inc.

A short introduction to the Summer Student Hardware Labs



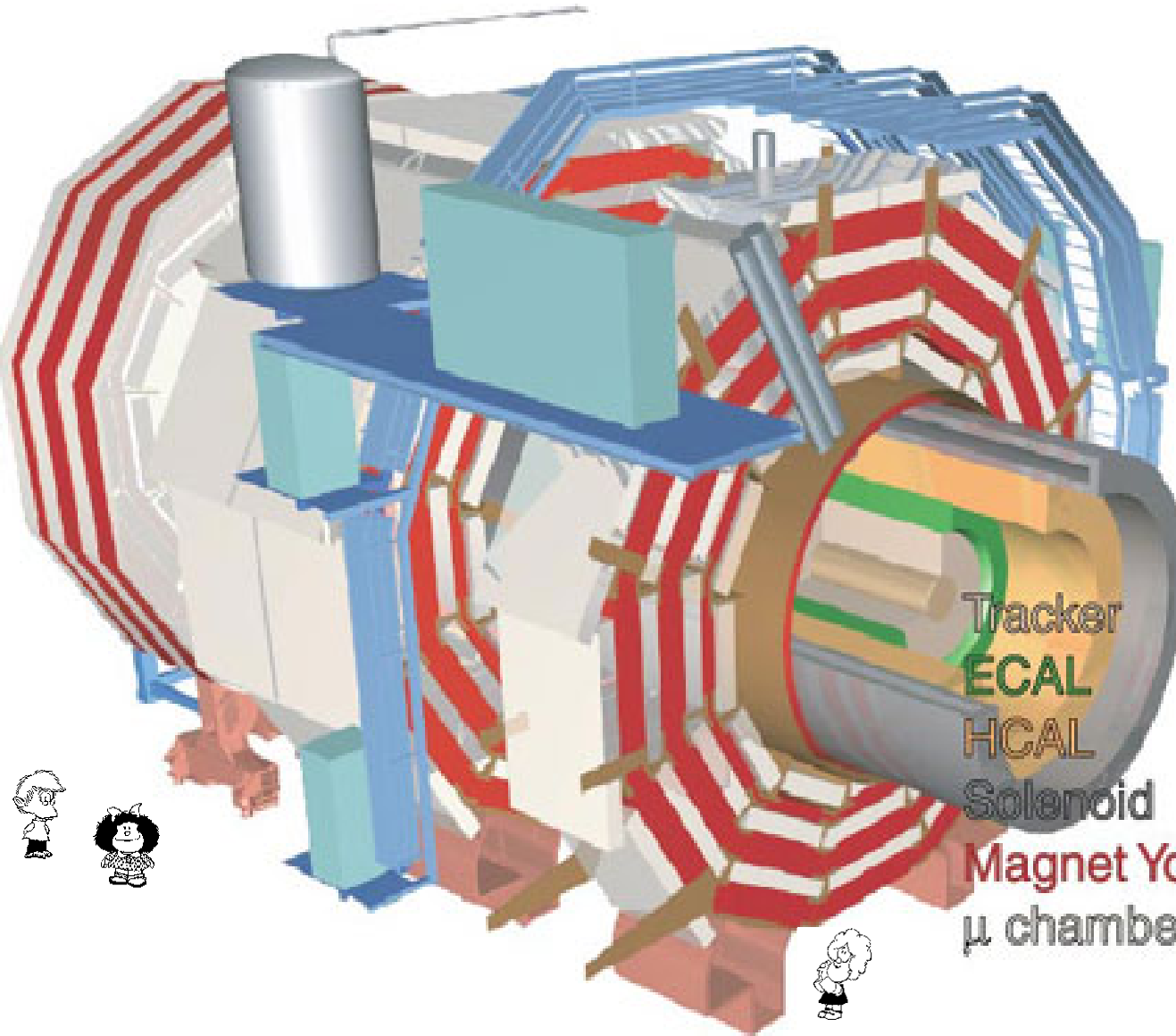
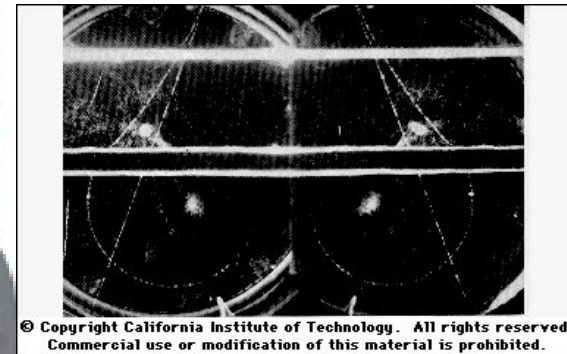
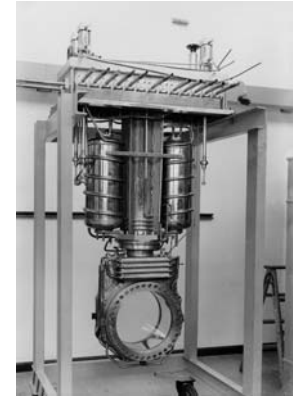
© 1972 United Feature Syndicate, Inc.



5/11/02

The Summer Student Hardware Labs

(even in software and physics)



With the size of the experimental tools in high energy physics getting larger and more complicated, it is very hard in some short summer months to get a feeling of the different aspects of an experiment.



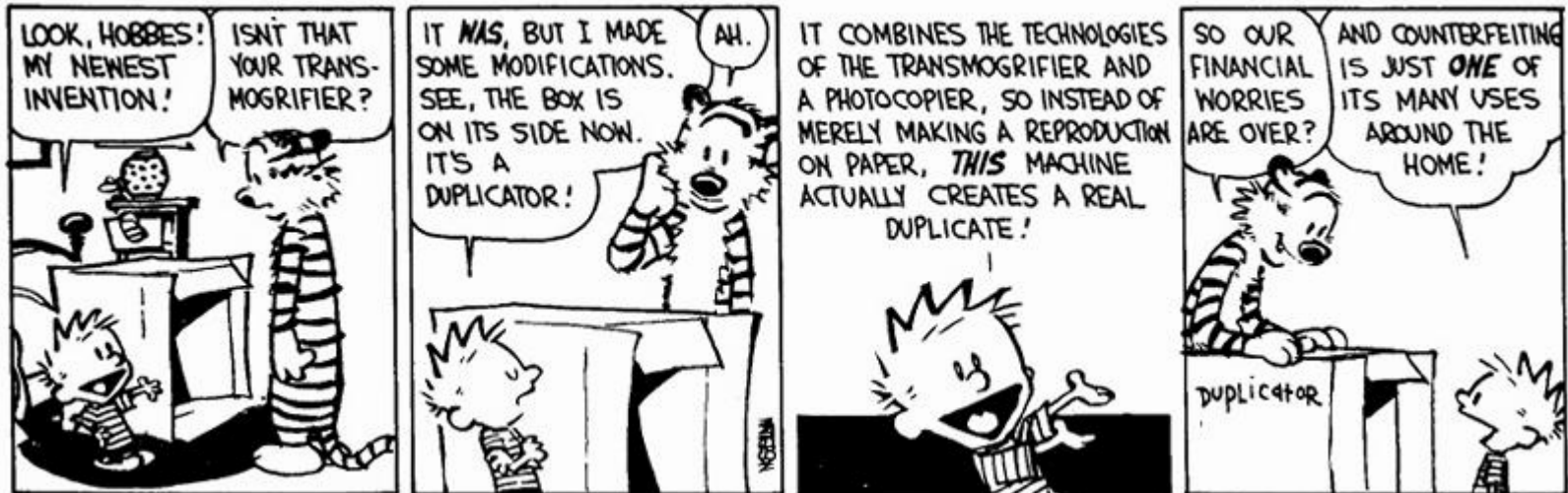


We would therefore like to invite you into some of our labs and try to show you in a few hours what we are doing there and why we are doing it.

Who are "we" :

Tito Bellunato
 Andre Braem
 Carmelo D'Ambrosio
 Ilias Efthymiopoulos
 Lau Gatignon
 Alison Gouldwell
 Christian Joram
 Beat Jost
 Michael Moll
 Niko Neufeld
 Mike Seymour
 Tim Stelzer

EGEE Team



Mirrors and Light

Teacher: Tito Bellunato

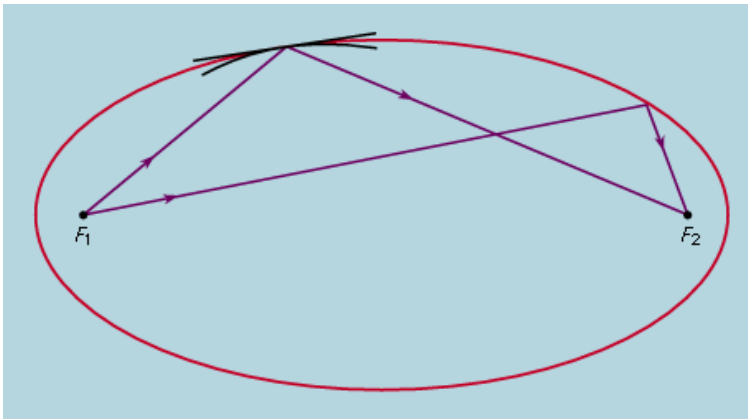
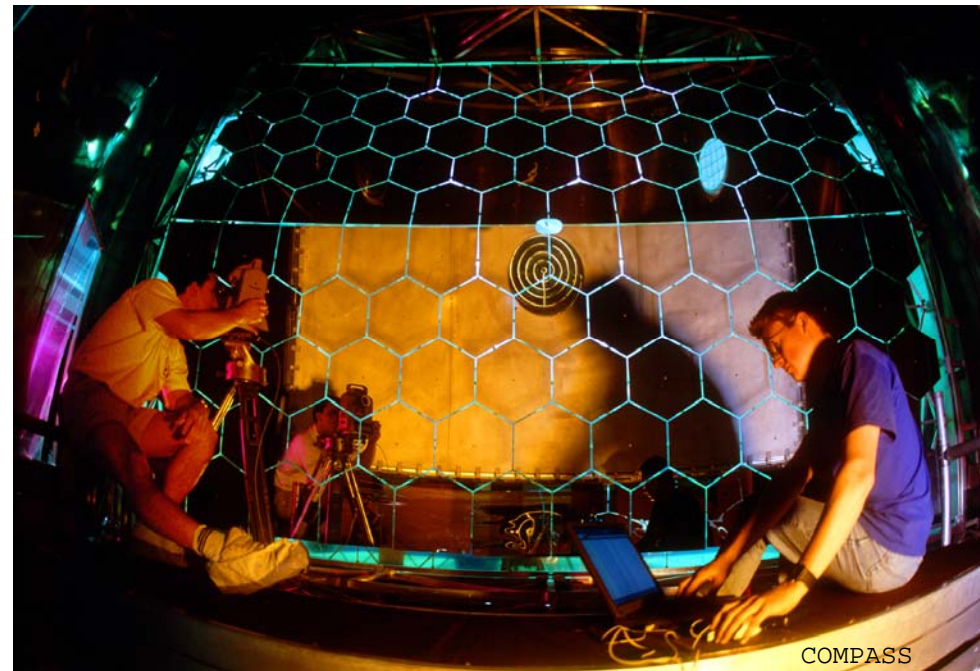
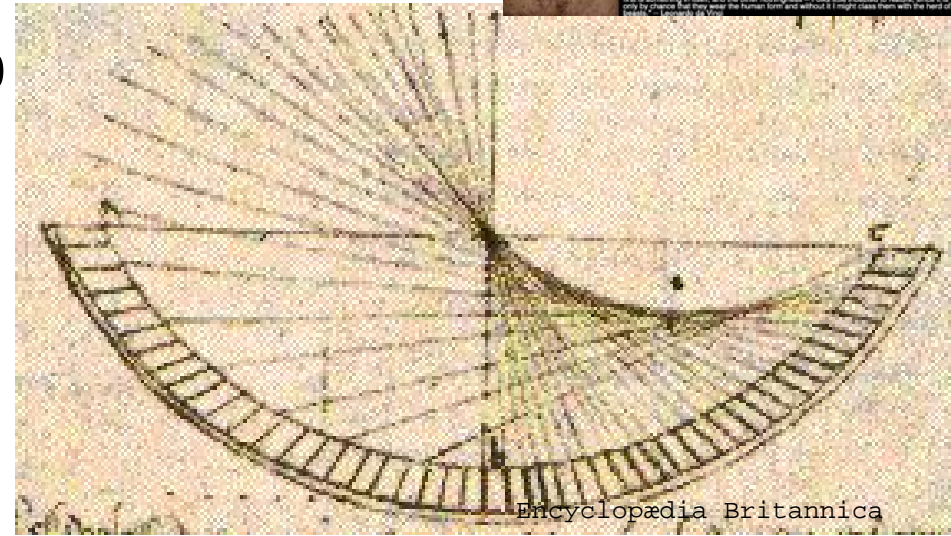
Requirements: none

Time : one afternoon, 14:00 – 18:00

Dates : 4 groups with 3 students
1 to 4 August .

Place : 17-1-007

Perform measurements of the radius of curvature of a spherical mirror and its average geometrical deviation from the ideal spherical shape. Such mirrors are used in Rich Imaging Cherenkov (RICH) detectors at CERN. Composite, Beryllium and glass substrate mirrors will be used.



X- and Gamma- rays detection with a Hybrid PhotoMultiplier Tube

Contact person: Carmelo D'Ambrosio

Requirements: none

Time : one afternoon, 14:30 - 17:30

Dates : 4 groups of 3 students

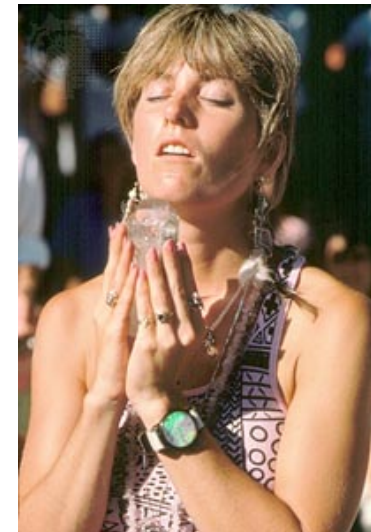
Dates : first half of August

Place : 29-1-005

Please note that gamma sources and high voltages are present on the set-up.



New Scintillating Crystals are being developed for bio-medical applications, which were first developed for high energy physics or material science. With a new generation of photodetectors being made available for the same applications (HPMTs, APDs, SDCs, etc.), these gamma detectors (crystal + photodetector) represent an important contribution in the evolution of instrumentation for physics and non-physics applications.



Data Acquisition (and fun with bits lost and found).

Contact persons:

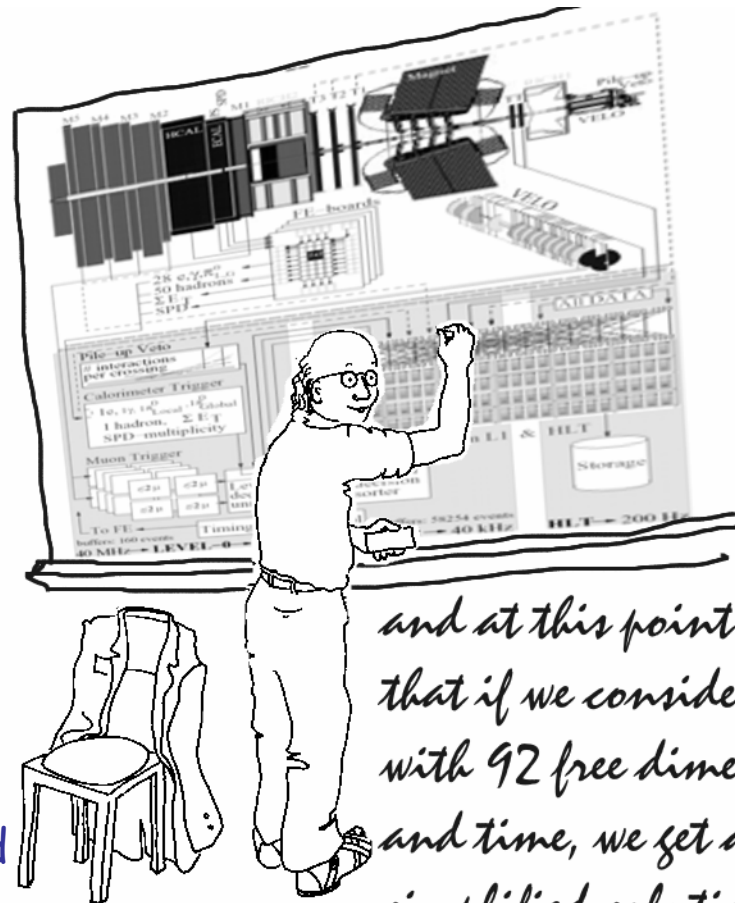
Beat Jost and Niko Neufeld

Requirements: Some basic programming experiences would be good - but that should not deter anyone.

Time : one afternoon, 14:00 - 18:00

Dates : 24, 25 July and 15, 16 August

Place : Meeting place 2/R-019



and at this point we notice that if we consider the trigger with 92 free dimensions in space and time, we get a beautifully simplified solution!

DAQ systems at LHC will have to move huge amounts of data (several GB/sec) operating on links which run at 1 GHz. Students will have an opportunity to see a prototype system for the LHCb data acquisition. You will be able to operate and modify high speed network switching code. The software can be experienced on real hardware as well as closely monitored in graphical simulation programs.

Measurements with scintillating fibres.

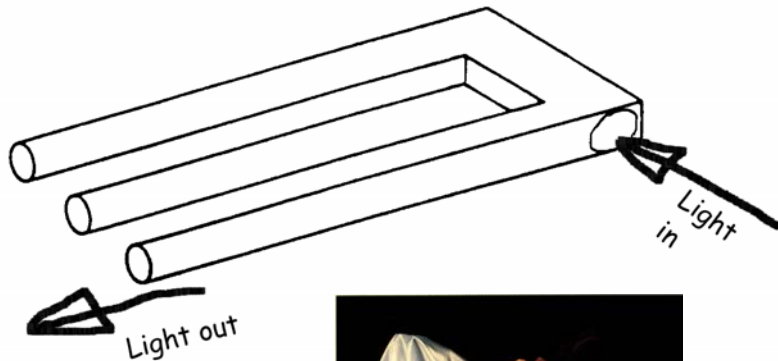
Contact Persons : Christian Joram and Andre Braem.

3 afternoons with 3 students.

When: 8, 10 and 12 August at 14:00

Where: Meeting room: 3-R-020.

What: Scintillation emission spectrum, light absorption length, reflective coating, photodetectors.



CERN photo CERN-EX-9201043

End part of the scintillating fibre detector of the CHORUS experiment. There are 1 million fibres and each fibre has a diameter of 500 .micron.m.

Characterization of Silicon sensors.

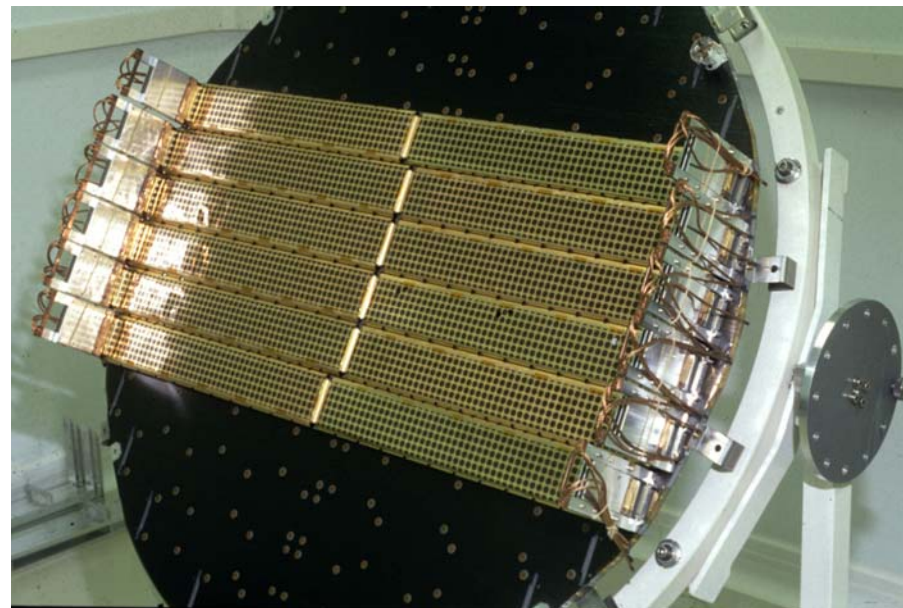
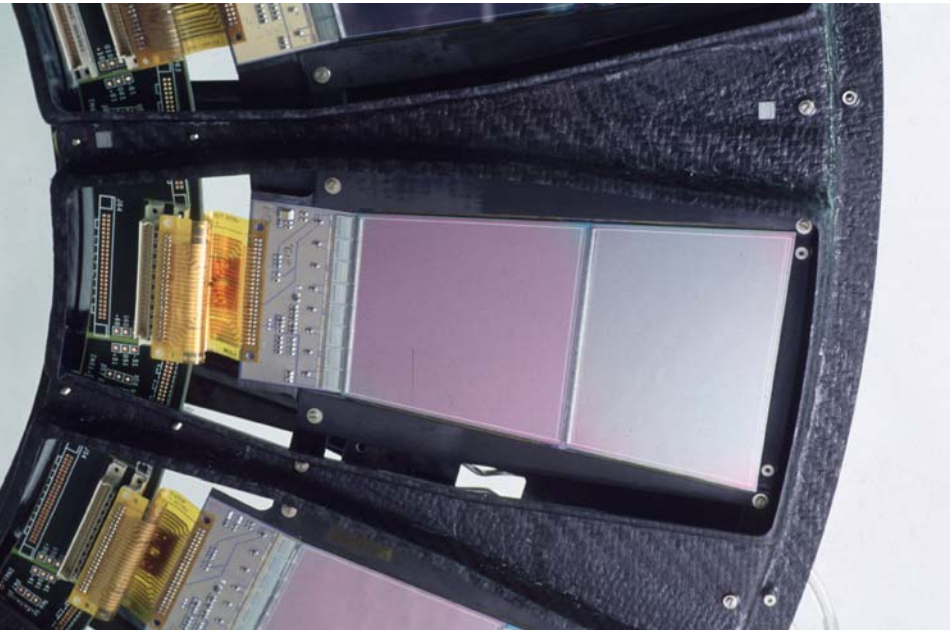
Contact Persons : [Michael Moll](#) and [Alison Gouldwell](#).

3 afternoons with 3 students.

When: Tuesday, Wednesday and Thursday 26, 27 and 28 of July

Where: Meeting room: 28-R-017.

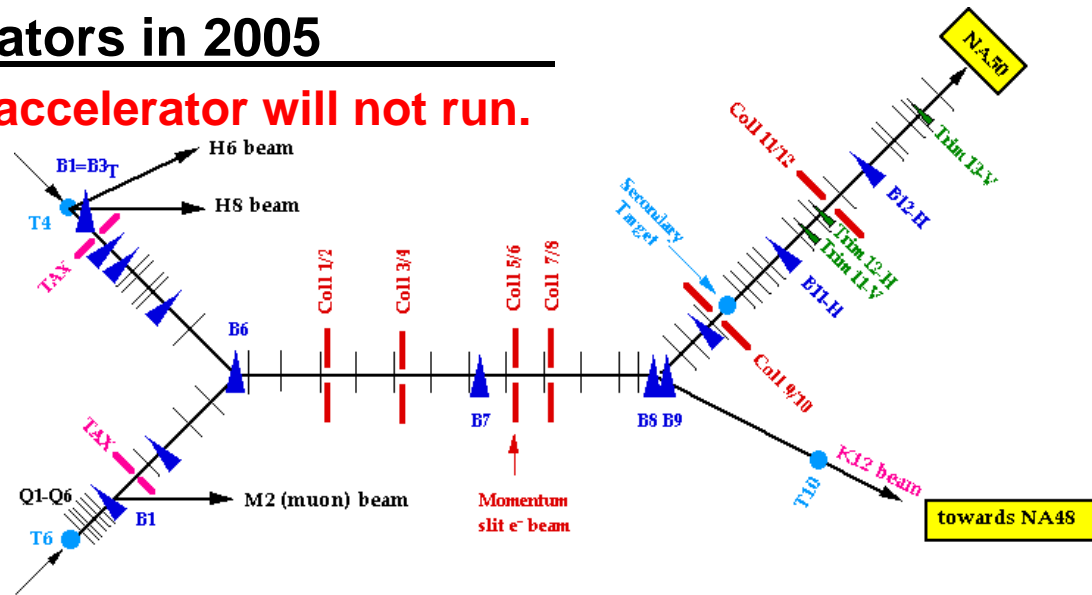
What: We will measure the following properties on irradiated and non-irradiated silicon detectors: Reverse current, detector capacitance, depletion voltage and charge collection efficiency. This will give you an impression on how much detectors in the LHC will suffer from radiation damage. In a concluding discussion we will look at some possibilities on how to make detectors radiation harder.



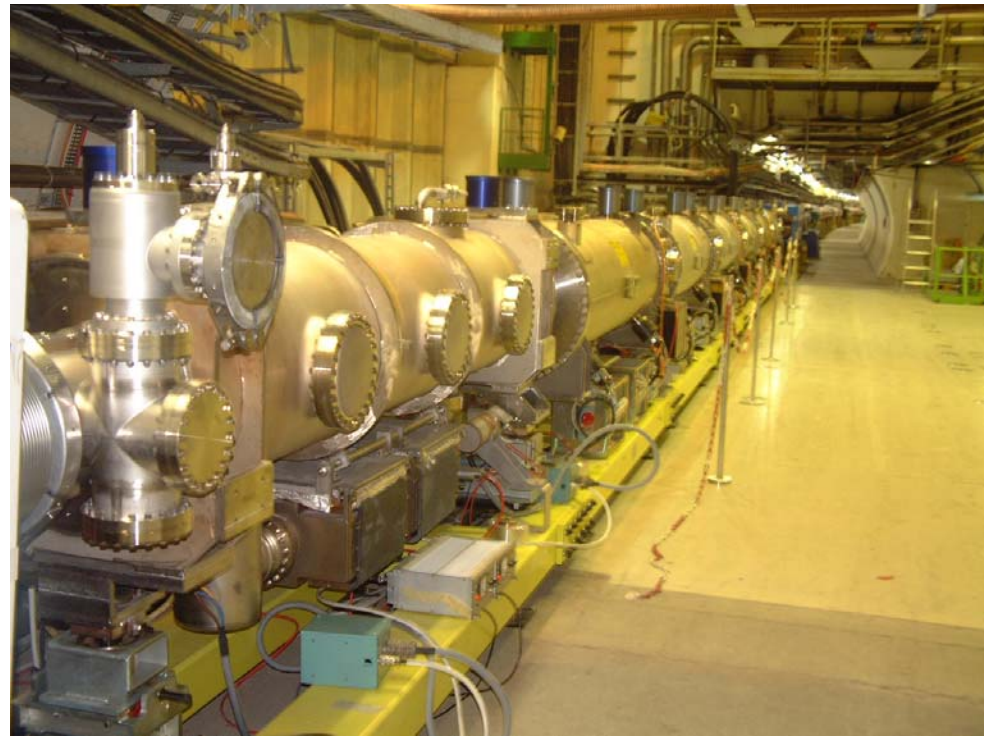
Status of CERN accelerators in 2005

In 2005, both the PS and the SPS accelerator will not run.

However even so, we can offer you the opportunity to learn about and see what a real secondary beam line is, how it is made and how it looks like.

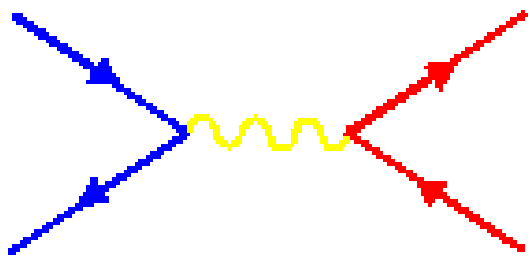


SCHEMATIC VIEW OF THE P41 / P42 / P61 / P62 BEAMS

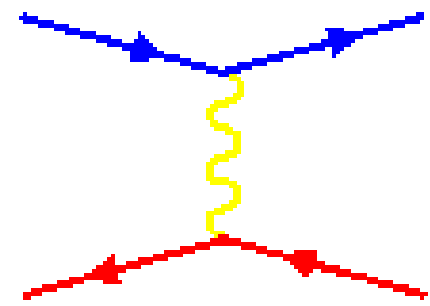


Organisers : AB/ATB group
Contact person : Ilias Efthymiopoulos
Lau Gatignon

One afternoon: Wednesday 27 July
Bus from/to Main building
max 30 students.



MadGraph



Contact Persons: Tim Stelzer
Mike Seymour

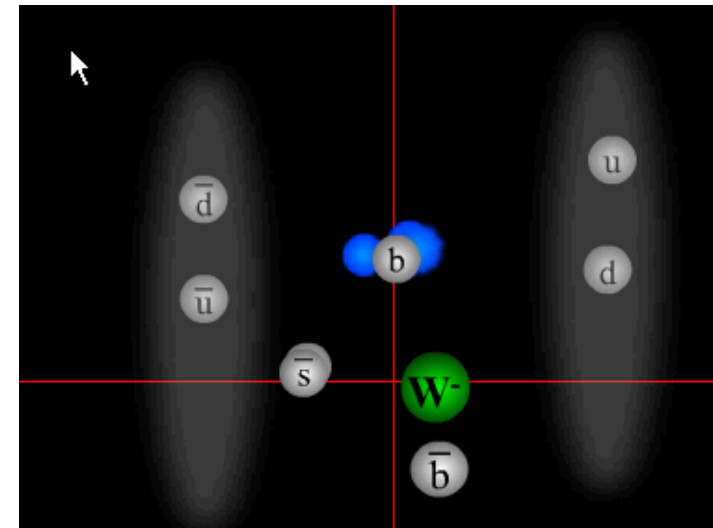
Up to 3 afternoons with up to 20 students each time.

Training Centre (bgs. 593 and 572), rooms 23 and 24 at 14:00.

Tuesday 2, Wednesday 3 and Friday 5 August.

In this workshop we will

- 1) Discuss the various aspects of a hard-hadronic collision using a FLASH simulation.
- 2) Develop cutting edge Monte Carlo techniques necessary for simulating these collisions.
- 3) Use MadEvent's new web-based capabilities to produce event simulations for processes important to LHC physics.



①

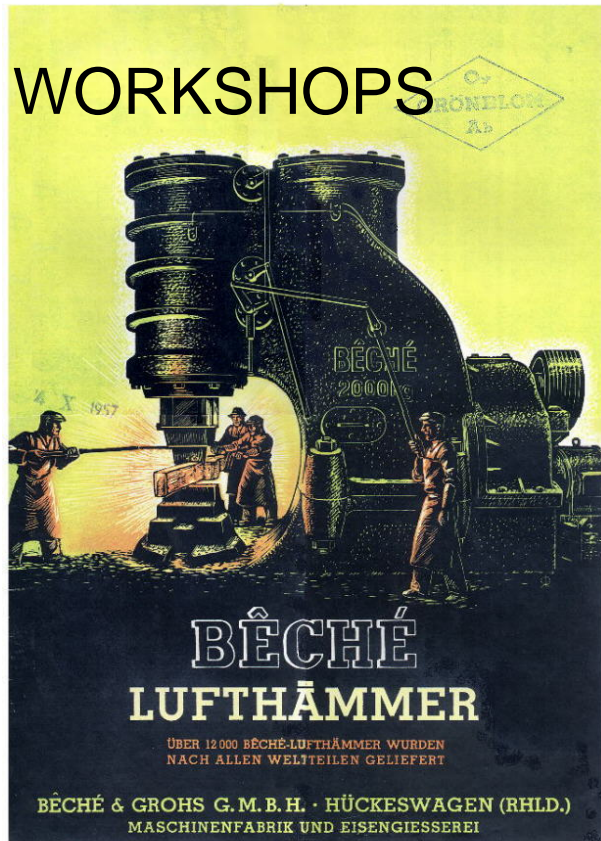
What you have to do

Get onto

<http://humanresources.web.cern.ch/HumanResources/external/recruitment/Summies/default.asp>
and do what Ingrid will tell you to do just now

②

And click on



③

Have fun!

