

Graduate School in Physics and Astrophysics

Annual Report

Name: Marco Musich
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Cycle: XXIII
Year completed (1,2 or 3): 1
Supervisor: E. Migliore

GRADUATE SCHOOL COURSES

(only completed courses, with examination passed in the year)

Code: 01

Title: **Introduction to perturbative QCD**
Teacher: M.E. Boglione
Hours: 25

Code: 09

Title: **Trigger and Data Acquisition in Particle Physics Experiments**
Teacher: P.G. Innocenti
Hours: 14

Code: 22

Title: **Calorimetry in Particle Physics Experiments**
Teacher: R. Arcidiacono
Hours: 16

SUMMER SCHOOLS, INTERNATIONAL SCHOOLS

Title: **XVIII Giornate di studio sui rivelatori**
Place: Villa Gualino - Torino (Italy)
Webpage: <http://www.gsr.unito.it/>
Days: 4
Talk or poster (Y/N): No

CONFERENCES, WORKSHOP

title: **V Workshop Italiano sulla Fisica p-p ad LHC**
place: Perugia (Italy)
webpage: <http://www.pg.infn.it/pp1hc08/>
days: 4
talk or poster (Y/N): No

Title: **XCIV Congresso Nazionale SIF**

Place: Genova (Italy)
Webpage: <http://atticon.sif.it/>
Days: 1
Talk or poster (Y/N): Yes (Talk: **Allineamento del Tracker di CMS con raggi cosmici**)

Title: **XVIII International Conference on Particles and Nuclei (PANIC08)**
Place: Eilat (Israel)
Webpage: <http://www.weizmann.ac.il/conferences/panic08/>
Days: 6
Talk or poster (Y/N): Yes (Poster: **The CMS Silicon Strip Tracker**)

Title: CMS Week 25-29/02
Place: CERN - Meyrin(CH)
Webpage: <http://indico.cern.ch/conferenceDisplay.py?confId=28775>
Days: 4
Talk or poster (Y/N): No

Title: CMS Week 22-26/09
Place: CERN - Meyrin (CH)
Webpage: <http://indico.cern.ch/conferenceDisplay.py?confId=40611>
Days: 3
Talk or poster (Y/N): No

title: **IX Meeting CMS Italia**
place: Torino (Italy)
webpage: <http://cms-italia-2008.to.infn.it/index.html>
days: 2
talk or poster (Y/N): No

PUBLICATIONS IN THE YEAR

Title: **The CMS experiment at the CERN LHC.**
Author: R. Adolphi et al.
Date: 2008
Journal: JINST 3:S08004, 2008

VISITS AND STAGES

Institution:CERN
Place:Geneva (CH)
Starting date: 06/02/2008
Days: 51 (through the year)

RESEARCH ACTIVITY

My research activity is focused on the study of the CMS Tracker performances: in particular I'm working on the alignment of the Silicon Strip Tracker. I participated in the development of the analysis software workflow of alignment, contributed defining the alignment strategies using one of the CMS algorithms (MillePede) and developed and run validation procedure during the last CMS Global Runs. All these studies have been carried out using the cosmic ray muons acquired and reconstructed by CMS Tracker in the period July/December 2008. In parallel I'm active in the SM Higgs physics analysis group. In particular I'm focused on the "golden" decay channel $H \rightarrow ZZ \rightarrow 4l$, which with its clean four lepton final state signature, is the best discovery channel candidate for an high and intermediate mass Higgs. I contributed in the calculation of the signal trigger efficiencies and made studies on the lepton isolation, which is a fundamental cut variable to discriminate Higgs signal among the huge QCD background, hence improving signal significance.