Michigan REU Summer Student Program

Report of Contributions

https://indico.cern.ch/e/399968

Contribution ID: **0** Type: **not specified**

Introductory Remarks

Thursday 2 July 2015 15:00 (15 minutes)

Presenters: GULL, Christoph Emanuel (University of Michigan (US)); ZHU, Junjie (University of Michigan (US)); GOLDFARB, Steven (University of Michigan (US))

Contribution ID: **1** Type: **not specified**

Automated Grid Monitoring for LHCb Experiment through HammerCloud

Thursday 2 July 2015 15:15 (5 minutes)

Abstract: The Worldwide Large Hadron Collider Computing Grid (WLCG) links 170 computing sites from around the world, creating the world's largest grid computer. Jobs from LHC experiments are submitted to the grid for processing, simulation, and analysis. A framework called HammerCloud has been developed to assist in live monitoring of the health of the grid. This project aims to extend HammerCloud's monitoring capabilities for ATLAS and CMS to the LHCb experiment, ensuring reliable user access to data and measuring the stability of grid health.

Presenter: DICE, Bradley

Contribution ID: **2** Type: **not specified**

Fast Timing Simulations of HGCal for CMS

Thursday 2 July 2015 15:20 (5 minutes)

Presenter: Sarah Marie Bruno

Abstract: Higgs boson production in proton-proton collisions can occur via the fusion of two gluons or by the fusion of vector-bosons (VBF) as well as other, rarer mechanisms. Separating the two production mechanisms is of crucial importance for precision test of electro-weak symmetry breaking. VBF production can be tagged by identifying the jets originating from the two vector bosons when they fuse into a Higgs boson. These jets are typically in a pT range below 50 GeV and are in an eta range beyond eta 2.5. This poses challenges to the reconstruction of such jets as the detector region they are detected in is heavily contaminated by activity from parasitic collisions (pile-up, PU). Various techniques are utilized to separate activity steaming from the actual VBF jet and activity from the PU collisions. A novel approach uses in addition the time of arrival of the energy of particles in the calorimeter. With a timing measurement precision of order 100 ps or better one can exploit the time of flight information to reconstruct the origin of particles and test the consistency of the arrival time in the calorimeter. In the context of the CMS Phase II upgrade forward calorimeter options with enhanced timing performance have been proposed. In this project the simulation of these options allows to study algorithms using the timing measurement of the calorimeters with an assumed resolution of a few 10 ps. Real CMS data can also be used to validate the simulation results.

Contribution ID: **3** Type: **not specified**

Measuring the lepton charge misidentification rate for SUSY analysis

Thursday 2 July 2015 15:25 (5 minutes)

Electron charges can sometimes be misidentified in the ATLAS detector, i.e. a positron could be read as an electron or vice versa. Obviously this can be a problem when taking data, however this is also important as certain decays in electroweak SUSY would give same-sign lepton pairs. The methods that will be used are tag-and-probe and the likelihood method.

Presenter: GALLARDO, Gabriel Emmanuel (University of Hong Kong (HK))

Contribution ID: **4** Type: **not specified**

Categorization of pMSSM models for 13 TeV runs

Thursday 2 July 2015 15:30 (5 minutes)

Presenter: COYLE, Nina Mireille (University of Chicago (US))

Contribution ID: **5** Type: **not specified**

Measurement of the top quark mass in single top events using tracks only

Thursday 2 July 2015 15:35 (5 minutes)

Abstract: The top mass is crucial to our understanding of the Standard Model. Many analyses have been performed, to ever increasing precision, to narrow down the range of the top mass. This analysis uses the reconstructed tracks from the CMS detector to reconstruct the top and determine its mass. With this technique, we hope to eliminate several uncertainties in the measurement.

Presenter: DRUEKE, Elizabeth (CERN)

Contribution ID: **6** Type: **not specified**

An Efficient Way to Access ATLAS Conditions Data via PBEAST

Thursday 2 July 2015 15:40 (5 minutes)

Contribution ID: **7** Type: **not specified**

Aging Analysis of Micromegas Detectors for ATLAS New Small Wheel

Thursday 2 July 2015 15:45 (5 minutes)

Contribution ID: **8** Type: **not specified**

Design of Experiments for the 2015 CLOUD Run

Thursday 2 July 2015 15:50 (5 minutes)

Abstract: The next series of CLOUD experiments will aim to understand the effect of several factors on cloud formation, including seven parameters such as the concentration of different chemical compounds, temperature, and ionization rates due to cosmic rays. A maximin Latin hypercube sampling technique will be used to determine a design data set in this seven dimensional space to provide the most comprehensive determination of the effect on nucleation rate. A Gaussian process emulator can then predict the nucleation rates across the sampling space, and, when applied to a climate model, the nucleation rates in Earth's atmosphere.

Presenter: MADDOX, Sarah Frances (University of Michigan (US))

Contribution ID: **9** Type: **not specified**

Aaron's Talk

Thursday 2 July 2015 15:55 (5 minutes)

Contribution ID: **10** Type: **not specified**

Sensitivity Study of the ATLAS Run-II in $Z\gamma$ Final States

Thursday 2 July 2015 16:15 (5 minutes)

Presenter: POLLOCK, James Wesley Yates (University of Michigan (US))

Contribution ID: **11** Type: **not specified**

Depletion depth studies of HV-CMOS detectors

Thursday 2 July 2015 16:50 (5 minutes)

Speaker: Stewart Laroche

Contribution ID: **13** Type: **not specified**

Missing Transverse Momentum Resolution due to Pileup,Hadron Calorimeter Readout Electronics Calibration,and Hadron Calorimeter Scintillator Upgrade

Thursday 2 July 2015 16:30 (5 minutes)

Presenter: YANG, Zishuo (University of Maryland (US))

Contribution ID: **14** Type: **not specified**

Defining Separatrices of Penning Traps with Strong Magnetic Mirrors

Thursday 2 July 2015 16:35 (5 minutes)

A magnetic mirror is used to cool our antimatter plasma to 10 microkelvin. This magnetic mirror is highly asymmetric. The current literature defines the separatrix of only of magnetic mirrors with a small mirror coefficient. To see the effects of our trap on the cooling of particles, we need to define the characteristics of our unique trap.

Presenter: BROWN, Stephanie (Penn State)

Contribution ID: **15** Type: **not specified**

FTK b-tagging: Primary Vertex and Pile-up Study

Thursday 2 July 2015 16:25 (5 minutes)

Presenter: ANDRADE, Nicolas Miguel (University of Michigan (US))

Contribution ID: **16** Type: **not specified**

A Toy Model of Heavy Ion Collisions for ALICE

Thursday 2 July 2015 16:00 (15 minutes)

Presenter: PARIKH, Aditya Deepak (Rutgers, State Univ. of New Jersey (US))