

Fourth Annual Large Hadron Collider Physics Conference 2016



Report of Contributions

Contribution ID: 0

Type: **not specified**

Theory overview of SM and BSM Higgs Physics

Monday, June 13, 2016 1:30 PM (20 minutes)

Presenter: PETRIELLO, Frank (Northwestern University and Argonne National Lab)

Session Classification: Higgs (SM & BSM) Plenary

Contribution ID: 1

Type: **not specified**

Higgs boson results from the LHC Run-2

Monday, June 13, 2016 2:00 PM (20 minutes)

Presenter: STRANDBERG, Jonas (KTH Royal Institute of Technology (SE))

Session Classification: Higgs (SM & BSM) Plenary

Contribution ID: 2

Type: **not specified**

Higgs boson results from the LHC Run-1

Monday, June 13, 2016 2:30 PM (20 minutes)

Presenter: DONATO, Silvio (Universita di Pisa & INFN (IT))

Session Classification: Higgs (SM & BSM) Plenary

Contribution ID: 3

Type: **not specified**

Beyond the SM Higgs searches

Monday, June 13, 2016 3:00 PM (20 minutes)

Presenter: TANAKA, Junichi (University of Tokyo (JP))

Session Classification: Higgs (SM & BSM) Plenary

Contribution ID: 4

Type: **not specified**

Theory overview of QCD physics at hadron colliders

Tuesday, June 14, 2016 8:30 AM (20 minutes)

Presenter: SALAM, Gavin (CERN)

Session Classification: QCD Plenary

Contribution ID: 5

Type: **not specified**

Soft QCD physics in pp collisions at the LHC

Tuesday, June 14, 2016 9:00 AM (20 minutes)

Presenter: VILLALOBOS BAILLIE, Orlando (University of Birmingham (GB))

Session Classification: QCD Plenary

Contribution ID: 6

Type: **not specified**

Jet and photon physics in pp collisions at the LHC

Tuesday, June 14, 2016 9:30 AM (20 minutes)

Presenter: CIULLI, Vitaliano (Universita e INFN, Firenze (IT))

Session Classification: QCD Plenary

Contribution ID: 7

Type: **not specified**

Vector boson (plus jets) physics in pp collisions at the LHC

Tuesday, June 14, 2016 10:00 AM (20 minutes)

Presenter: SANTANA RANGEL, Murilo (Univ. Federal do Rio de Janeiro (BR))

Session Classification: QCD Plenary

Contribution ID: 8

Type: **not specified**

Theory overview of Heavy Ion collisions

Tuesday, June 14, 2016 4:30 PM (20 minutes)

Presenter: LAPPI, Tuomas (University of Jyvaskyla)

Session Classification: Heavy Ions Plenary

Contribution ID: 9

Type: **not specified**

Soft probes in heavy ion collisions

Tuesday, June 14, 2016 5:00 PM (20 minutes)

Presenter: BUFALINO, Stefania (Universita e INFN Torino (IT))

Session Classification: Heavy Ions Plenary

Contribution ID: **10**

Type: **not specified**

Hard probes in heavy ion collisions

Tuesday, June 14, 2016 5:30 PM (20 minutes)

Presenter: RYBAR, Martin (Univ. Illinois at Urbana-Champaign (US))

Session Classification: Heavy Ions Plenary

Contribution ID: **11**

Type: **not specified**

Results from proton–lead collisions

Tuesday, June 14, 2016 6:00 PM (20 minutes)

Presenter: MISCHKE, Andre (Universiteit Utrecht)

Session Classification: Heavy Ions Plenary

Contribution ID: 12

Type: **not specified**

Theory overview of searches for Supersymmetry

Thursday, June 16, 2016 8:30 AM (20 minutes)

Presenter: REECE, Matthew (Harvard University)

Session Classification: SUSY Plenary

Contribution ID: 13

Type: **not specified**

Inclusive searches for gluinos and squarks at the LHC

Thursday, June 16, 2016 9:00 AM (20 minutes)

Presenter: HODGKINSON, Mark (University of Sheffield (GB))

Session Classification: SUSY Plenary

Contribution ID: 14

Type: **not specified**

SUSY searches in lepton and photon final states at the LHC

Thursday, June 16, 2016 9:30 AM (20 minutes)

Presenter: SCHULTE, Jan-Frederik (Rheinisch-Westfaelische Tech. Hoch. (DE))

Session Classification: SUSY Plenary

Contribution ID: 15

Type: **not specified**

Third generation SUSY searches at the LHC

Thursday, June 16, 2016 10:00 AM (20 minutes)

Presenter: HOPKINS, Walter (University of Oregon (US))

Session Classification: SUSY Plenary

Contribution ID: 17

Type: **not specified**

Theory overview of heavy flavour physics

Friday, June 17, 2016 8:30 AM (20 minutes)

Presenter: JUNG, Martin (TUM IAS / Excellence Cluster Universe)

Session Classification: Heavy Flavour Plenary

Contribution ID: **18**

Type: **not specified**

Heavy flavour production and spectroscopy at the LHC

Friday, June 17, 2016 9:00 AM (20 minutes)

Presenter: KREPS, Michal (University of Warwick (GB))

Session Classification: Heavy Flavour Plenary

Contribution ID: 19

Type: **not specified**

CP violation, mixing and semileptonic decays in beauty and charm at the LHC

Friday, June 17, 2016 9:30 AM (20 minutes)

Presenter: NEEDHAM, Matthew David (University of Edinburgh (GB))

Session Classification: Heavy Flavour Plenary

Contribution ID: 20

Type: **not specified**

Rare decays of flavoured mesons at the LHC

Friday, June 17, 2016 10:00 AM (20 minutes)

Presenter: PUIG NAVARRO, Albert (Ecole Polytechnique Federale de Lausanne (CH))

Session Classification: Heavy Flavour Plenary

Contribution ID: 21

Type: **not specified**

Theory overview of top physics

Friday, June 17, 2016 1:30 PM (20 minutes)

Presenter: MITOV, Alexander Dimitrov (University of Cambridge (GB))

Session Classification: Top Plenary

Contribution ID: 22

Type: **not specified**

Top-quark production at hadron colliders

Friday, June 17, 2016 2:00 PM (20 minutes)

Presenter: KNUE, Andrea Helen (University of Glasgow (GB))

Session Classification: Top Plenary

Contribution ID: 23

Type: **not specified**

Top-quark properties

Friday, June 17, 2016 2:30 PM (20 minutes)

Presenter: FERNANDEZ MENENDEZ, Javier (Universidad de Oviedo (ES))

Session Classification: Top Plenary

Contribution ID: 24

Type: **not specified**

Single top production and properties at the LHC

Friday, June 17, 2016 3:00 PM (20 minutes)

Presenter: SKOVPEN, Kirill (Institut Pluridisciplinaire Hubert Curien (FR))

Session Classification: Top Plenary

Contribution ID: 25

Type: **not specified**

ALICE upgrade plans & potential

Saturday, June 18, 2016 8:30 AM (20 minutes)

Presenter: ANTONIOLI, Pietro (Universita e INFN, Bologna (IT))

Session Classification: Plenary upgrade

Contribution ID: 26

Type: **not specified**

LHCb upgrade plans & potential

Saturday, June 18, 2016 8:53 AM (20 minutes)

Presenter: CARDINI, Alessandro (INFN Cagliari, Italy)

Session Classification: Plenary upgrade

Contribution ID: 27

Type: **not specified**

ATLAS upgrade plans & potential

Saturday, June 18, 2016 9:16 AM (20 minutes)

Presenter: HENRIQUES CORREIA, Ana Maria (CERN)

Session Classification: Plenary upgrade

Contribution ID: 28

Type: **not specified**

CMS upgrade plans & potential

Saturday, June 18, 2016 9:39 AM (20 minutes)

Presenter: BELLONI, Alberto (University of Maryland (US))

Session Classification: Plenary upgrade

Contribution ID: 29

Type: **not specified**

Theory overview of electroweak physics at hadron colliders

Wednesday, June 15, 2016 8:30 AM (20 minutes)

Presenter: CAMPBELL, John (FNAL)

Session Classification: Electroweak Plenary

Contribution ID: **30**

Type: **not specified**

Precision electroweak physics at hadron colliders

Wednesday, June 15, 2016 9:00 AM (20 minutes)

Presenter: SCHOTT, Matthias (Johannes-Gutenberg-Universitaet Mainz (DE))

Session Classification: Electroweak Plenary

Contribution ID: **31**

Type: **not specified**

Di-boson production at the LHC

Wednesday, June 15, 2016 9:30 AM (20 minutes)

Presenter: LLORET IGLESIAS, Lara (LIP Laboratorio de Instrumentacao e Fisica Experimental de Part)

Session Classification: Electroweak Plenary

Contribution ID: 32

Type: **not specified**

Multi-boson production, vector boson fusion & scattering processes at the LHC

Wednesday, June 15, 2016 10:00 AM (20 minutes)

Presenter: NURSE, Emily Laura (University of London (GB))

Session Classification: Electroweak Plenary

Contribution ID: 33

Type: **not specified**

Theory overview of new phenomena (non-SUSY)

Thursday, June 16, 2016 4:30 PM (20 minutes)

Presenter: POMAROL, Alex (CERN & UAB (Barcelona))

Session Classification: Exotics & Dark Matter Plenary

Contribution ID: 34

Type: **not specified**

Search for Dark Matter in X+MET signatures at the LHC

Thursday, June 16, 2016 5:00 PM (20 minutes)

Presenter: FROST, James (University of Oxford (GB))

Session Classification: Exotics & Dark Matter Plenary

Contribution ID: 35

Type: **not specified**

Search for new physics in fermionic final states at the LHC

Thursday, June 16, 2016 5:30 PM (20 minutes)

Presenter: SCHMIDT, Alexander (University of Hamburg)

Session Classification: Exotics & Dark Matter Plenary

Contribution ID: 36

Type: **not specified**

Search for new physics in bosonic final states at the LHC

Thursday, June 16, 2016 6:00 PM (20 minutes)

Presenter: HINZMANN, Andreas (Universitaet Zuerich (CH))

Session Classification: Exotics & Dark Matter Plenary

Contribution ID: 39

Type: **not specified**

Welcome

Monday, June 13, 2016 9:00 AM (15 minutes)

- Welcome and practical information from the local organizers
- Welcome from the Southern Region of Sweden, Märta Stenevi

Session Classification: Opening Plenary

Contribution ID: 40

Type: **not specified**

LHC: status, prospects and future challenges

Monday, June 13, 2016 9:15 AM (20 minutes)

Presenter: METRAL, Elias (CERN)

Session Classification: Opening Plenary

Contribution ID: 41

Type: **not specified**

Status and recent highlights from ATLAS

Monday, June 13, 2016 9:40 AM (20 minutes)

Presenter: WENGLER, Thorsten (CERN)

Session Classification: Opening Plenary

Contribution ID: 42

Type: **not specified**

Status and recent highlights from LHCb

Monday, June 13, 2016 10:05 AM (20 minutes)

Presenter: CHARLES, Matthew John (LPNHE Paris, CNRS/IN2P3 UPMC and UPD)

Session Classification: Opening Plenary

Contribution ID: 43

Type: **not specified**

Status and recent highlights from CMS

Monday, June 13, 2016 11:00 AM (20 minutes)

Presenter: VAN MULDER, Petra (Vrije Universiteit Brussel (BE))

Session Classification: Opening Plenary

Contribution ID: 44

Type: **not specified**

Status and recent highlights from ALICE

Monday, June 13, 2016 11:25 AM (20 minutes)

Presenters: ARSENE, Ionut Arsene (University of Oslo); ARSENE, Ionut Cristian (University of Oslo (NO))

Session Classification: Opening Plenary

Contribution ID: 45

Type: **not specified**

Status and developments of event generators

Monday, June 13, 2016 11:50 AM (20 minutes)

Presenter: SJOSTRAND, Torbjorn (Lund University (SE))

Session Classification: Opening Plenary

Contribution ID: 46

Type: **not specified**

News from the LHCP IAC meeting

Saturday, June 18, 2016 10:30 AM (10 minutes)

Presenter: TOKUSHUKU, Katsuo (High Energy Accelerator Research Organization (JP))

Session Classification: Closing Plenary

Contribution ID: 47

Type: **not specified**

CERN, status and outlook

Saturday, June 18, 2016 10:40 AM (30 minutes)

Presenter: ELSEN, Eckhard (CERN)

Session Classification: Closing Plenary

Contribution ID: 48

Type: **not specified**

What do we know from astronomy about Dark Matter in the Universe?

Saturday, June 18, 2016 11:15 AM (30 minutes)

Presenter: READ, Justin (University of Surrey)

Session Classification: Closing Plenary

Contribution ID: 49

Type: **not specified**

Experimental summary

Saturday, June 18, 2016 11:50 AM (30 minutes)

Presenter: EINSWEILER, Kevin (Lawrence Berkeley National Lab. (US))

Session Classification: Closing Plenary

Contribution ID: 50

Type: **not specified**

Theory vision

Saturday, June 18, 2016 12:25 PM (30 minutes)

Presenter: WILCZEK, Frank (Massachusetts Institute of Technology, Department of Physics)

Session Classification: Closing Plenary

Contribution ID: 51

Type: **not specified**

Closing remarks

Saturday, June 18, 2016 1:00 PM (10 minutes)

Authors: BERNARDI, Gregorio (LPNHE-Paris CNRS/IN2P3); MITSELMAKHER, Guenakh (University of Florida (US))

Presenter: MITSELMAKHER, Guenakh (University of Florida (US))

Session Classification: Closing Plenary

Contribution ID: 55

Type: **Poster**

Boosting Higgs Pair Production in the $b\bar{b}b\bar{b}$ Final State with Multivariate Techniques

The measurement of Higgs pair production will be a cornerstone of the LHC program in the coming years. Double Higgs production provides a crucial window upon the mechanism of electroweak symmetry breaking and has a unique sensitivity to the Higgs trilinear coupling. We study the feasibility of a measurement of Higgs pair production in the $b\bar{b}b\bar{b}$ final state at the LHC. Our analysis is based on a combination of traditional cut-based methods with state-of-the-art multivariate techniques. We account for all relevant backgrounds, including the contributions from light and charm jet mis-identification, which are ultimately comparable in size to the irreducible $4b$ QCD background. We demonstrate the robustness of our analysis strategy in a high pileup environment. For an integrated luminosity of $L = 3 \text{ ab}^{-1}$, a signal significance of $S/B \sim 3$ is obtained, indicating that the $b\bar{b}b\bar{b}$ final state alone could allow for the observation of double Higgs production at the High Luminosity LHC. We also find that, provided light jet mis-identification can be reduced, the signal significance could be increased up to the discovery level.

Authors: ISSEVER, Cigdem (University of Oxford (GB)); Prof. BORTOLETTO, Daniela (University of Oxford (GB)); FROST, James (University of Oxford (GB)); BEHR, Janna Katharina (Deutsches Elektronen-Synchrotron (DE)); Dr ROJO, Juan (University of Oxford); HARTLAND, Nathan (University of Oxford)

Presenters: ISSEVER, Cigdem (University of Oxford (GB)); Prof. BORTOLETTO, Daniela (University of Oxford (GB)); FROST, James (University of Oxford (GB)); BEHR, Janna Katharina (Deutsches Elektronen-Synchrotron (DE)); Dr ROJO, Juan (University of Oxford); HARTLAND, Nathan (University of Oxford)

Session Classification: Poster Session

Track Classification: Higgs physics in the Standard Model and beyond

Contribution ID: 61

Type: **Poster**

Gauge Coupling Unification in Radiative Neutrino Mass Models

We investigate the renormalization group running of gauge couplings in various radiative neutrino mass models, which generate neutrino masses at one- and two-loop order. We discuss the possibility for these couplings to unify in such models at an energy scale close to the GUT scale. The studies are performed both analytically, at one-loop level, and numerically, at two-loop level, using the software PyR@TE. We study five different classes of models, which are (i) minimal dimension-7 models which generate neutrino masses at one-loop level (15 models), (ii) the same models with additional dark matter candidates (15 models), (iii) models with minimal dark matter which generate neutrino masses at one-loop level (35 models), (iv) the same models with all particles colored, and finally, (v) models with scalar colored octets (three models). The dark matter candidates, which are added in class (ii), are not excluded by direct detection constraints. In addition, each of the dark matter representations should not have a contribution to the running so that there is a Landau pole below a presumed unification scale. We find that unification is achieved in several models. The particles in class (i) are added in up to six generations and we find unification in four versions of the models in this class. Out of the models in class (ii), we find that 15 models that unify. In classes (iii) and (iv), we find unification in eight and two models, respectively. Finally, none of the models in class (v) unify. In general, we find that unification can occur and the scale is normally in the range $(10^{10} - 10^{14})$ GeV. The model with the highest scale is a model in class (i), which has the scale $1.8 \cdot 10^{16}$ GeV.

Author: RIAD, Stella (KTH Royal Institute of Technology)

Co-authors: HAGEDORN, Claudia (CP3-Origins, University of Southern Denmark); SCHMIDT, Michael (The University of Sydney); Prof. OHLSSON, Tommy (KTH Royal Institute of Technology)

Presenter: RIAD, Stella (KTH Royal Institute of Technology)

Session Classification: Poster Session

Track Classification: Higgs physics in the Standard Model and beyond

Contribution ID: 62

Type: **Poster**

Nonlinear Lorentz Models for Dark Matter and Dark Energy

In the previous efforts, we constructed N-Body systems based on non-temporal and nonlinear extension of Lorentz transformation. In this construction, we rely only on two parameters, nonlinear degree and normalized momentum to characterize the systems. We then explored root computation via iteration in the context of dynamical systems. The solution sets demonstrate various forms similar to canonical distributions. In a related application, we also explored this construction for modeling gravitational lens limitations (image number and brightness), and observed counter examples of Fundamental Theorem of Algebra. These efforts were recently further advanced for simulating the pre-chaotic distributions, and we observed that hierarchical structures are formed, which we attribute to the nonlinear coupling of momentum and angular momentum.

In this paper, we propose a new duality, momentum-angular-momentum duality from the efforts for two purposes. One is for unifying internal and external symmetry, and the other is for providing an alternative candidate for the phenomena currently claimed to be induced by dark matter and dark energy. This duality together with electromagnetic duality forms the dual-duality theory, which is expected to clarify some unsolved problems in GUT.

Author: Dr NI, David (Unitech)

Presenter: Dr NI, David (Unitech)

Session Classification: Poster Session

Track Classification: New Exotic phenomena and Dark Matter searches

Contribution ID: 63

Type: **not specified**

Jet reconstruction and substructure measurements in ATLAS and CMS with first Run-2 data

Monday, June 13, 2016 4:30 PM (15 minutes)

Presenter: MOZER, Matthias Ulrich (KIT - Karlsruhe Institute of Technology (DE))

Session Classification: Performance

Contribution ID: 64

Type: **not specified**

Performance of tracking and b-tagging in ATLAS and CMS with first Run-2 data

Monday, June 13, 2016 4:52 PM (15 minutes)

Presenter: MASIK, Jiri (University of Manchester (GB))

Session Classification: Performance

Contribution ID: 65

Type: **not specified**

The ALICE data-flow: from calibration, to QA, through reconstruction

Monday, June 13, 2016 5:14 PM (15 minutes)

Presenter: IVANOV, Marian (GSI - Helmholtzzentrum für Schwerionenforschung GmbH (DE))

Session Classification: Performance

Contribution ID: 66

Type: **not specified**

Real-time physics: novel concepts for trigger, calibration & alignment, and data processing with LHCb

Monday, June 13, 2016 5:36 PM (15 minutes)

Presenter: GRILLO, Lucia (Universita & INFN, Milano-Bicocca (IT))

Session Classification: Performance

Contribution ID: 67

Type: **not specified**

Luminosity calibration and measurement at the LHC

Monday, June 13, 2016 4:00 PM (20 minutes)

Presenter: KOZANECKI, Witold (CEA/IRFU,Centre d'etude de Saclay Gif-sur-Yvette (FR))

Session Classification: Performance

Contribution ID: **68**

Type: **not specified**

Theory of pp/pA/small systems

Tuesday, June 14, 2016 11:00 AM (12 minutes)

Presenter: BOZEK, Piotr (AGH University of Science and Technology)

Session Classification: Heavy Ion

Contribution ID: 69

Type: **not specified**

New results related to QGP in small systems with ALICE

Tuesday, June 14, 2016 11:15 AM (12 minutes)

Presenter: VISLAVICIUS, Vytautas (Lund University (SE))

Session Classification: Heavy Ion

Contribution ID: 70

Type: **not specified**

New results related to QGP in small systems with ATLAS

Tuesday, June 14, 2016 11:30 AM (12 minutes)

Presenter: TRZUPEK, Adam (Institute of Nuclear Physics Polish Academy of Sciences (PL))

Session Classification: Heavy Ion

Contribution ID: 71

Type: **not specified**

New results related to QGP in small systems with CMS

Tuesday, June 14, 2016 11:45 AM (12 minutes)

Presenter: CHEN, Zhenyu (Rice University (US))

Session Classification: Heavy Ion

Contribution ID: 72

Type: **not specified**

nCTEQ15 nuclear parton distributions with uncertainties

Tuesday, June 14, 2016 2:30 PM (12 minutes)

Presenter: JEZO, Tomas (Milano Bicocca)

Session Classification: Heavy Ion

Contribution ID: 73

Type: **not specified**

New results related to soft probes in PbPb at 5 TeV with ALICE

Tuesday, June 14, 2016 2:45 PM (15 minutes)

Presenter: CHRISTENSEN, Christian Holm (University of Copenhagen (DK))

Session Classification: Heavy Ion

Contribution ID: 74

Type: **not specified**

New results related to soft probes in PbPb at 5 TeV with ATLAS

Tuesday, June 14, 2016 3:05 PM (15 minutes)

Presenter: BROOKS, William King (Federico Santa Maria Technical University (CL))

Session Classification: Heavy Ion

Contribution ID: 75

Type: **not specified**

New results related to soft probes in PbPb at 5 TeV with CMS

Tuesday, June 14, 2016 3:25 PM (15 minutes)

Presenter: TU, Zhoudunming (Rice University (US))

Session Classification: Heavy Ion

Contribution ID: 76

Type: **not specified**

First LHCb Results from pA and PbPb collisions

Tuesday, June 14, 2016 3:45 PM (12 minutes)

Presenter: MASSACRIER, Laure Marie (Laboratoire de l'Accelérateur Lineaire (FR))

Session Classification: Heavy Ion

Contribution ID: 77

Type: **not specified**

Theory of hard probes in PbPb collisions

Wednesday, June 15, 2016 11:00 AM (12 minutes)

Presenter: Dr CHIEN, Yang-Ting (Los Alamos National Laboratory)

Session Classification: Heavy Ion

Contribution ID: 78

Type: **not specified**

New results related to hard probes in PbPb at 5 TeV with ALICE

Wednesday, June 15, 2016 11:15 AM (15 minutes)

Presenter: GRONEFELD, Julius Maximilian (GSI - Helmholtzzentrum für Schwerionenforschung GmbH (DE))

Session Classification: Heavy Ion

Contribution ID: 79

Type: **not specified**

New results related to hard probes in PbPb at 5 TeV with ATLAS

Wednesday, June 15, 2016 11:35 AM (15 minutes)

Presenter: KOSEK, Tomas (Charles University (CZ))

Session Classification: Heavy Ion

Contribution ID: **80**

Type: **not specified**

New results related to hard probes in PbPb at 5 TeV with CMS

Wednesday, June 15, 2016 11:55 AM (15 minutes)

Presenter: GULHAN, Doga Can (CERN)

Session Classification: Heavy Ion

Contribution ID: **81**

Type: **Talk**

Production of open heavy flavours and quarkonia in pp collisions with ALICE

Thursday, June 16, 2016 2:00 PM (15 minutes)

Author: ZAMPOLLI, Chiara (CERN)

Presenter: ZAMPOLLI, Chiara (CERN)

Session Classification: Heavy Flavour

Contribution ID: **82**

Type: **not specified**

HF production results at 13 TeV with ATLAS

Thursday, June 16, 2016 2:20 PM (15 minutes)

Presenter: CANALE, Vincenzo (Universita e INFN, Napoli (IT))

Session Classification: Heavy Flavour

Contribution ID: **83**

Type: **not specified**

HF production results at 13 TeV with CMS

Thursday, June 16, 2016 2:40 PM (15 minutes)

Presenter: BARTOSIK, Nazar (Universita e INFN Torino (IT))

Session Classification: Heavy Flavour

Track Classification: Heavy Flavour physics

Contribution ID: **84**

Type: **not specified**

HF Production results at 13 TeV with LHCb

Friday, June 17, 2016 11:00 AM (12 minutes)

Presenter: NEUNER, Max (Ruprecht-Karls-Universitaet Heidelberg (DE))

Session Classification: Heavy Flavour

Track Classification: Heavy Flavour physics

Contribution ID: 85

Type: **not specified**

New results in LU/LFV tests with LHCb

Thursday, June 16, 2016 3:20 PM (15 minutes)

Presenter: PRISCIANDARO, Jessica (Universidade de Santiago de Compostela (ES))

Session Classification: Heavy Flavour

Track Classification: Heavy Flavour physics

Contribution ID: **86**

Type: **not specified**

New physics facing LFU and LFV tests in B physics

Thursday, June 16, 2016 3:40 PM (15 minutes)

Presenter: Dr KOSNIK, Nejc (Josef Stefan Institute, Ljubljana, Slovenia)

Session Classification: Heavy Flavour

Contribution ID: 87

Type: **not specified**

HF spectroscopy and exotica with ATLAS

Friday, June 17, 2016 11:30 AM (12 minutes)

Presenter: IENGO, Paolo (CERN)

Session Classification: Heavy Flavour

Contribution ID: **88**

Type: **Talk**

HF spectroscopy and exotica with CMS

Friday, June 17, 2016 11:45 AM (12 minutes)

Author: POMPILI, Alexis (Universita e INFN, Bari (IT))

Presenter: POMPILI, Alexis (Universita e INFN, Bari (IT))

Session Classification: Heavy Flavour

Track Classification: Heavy Flavour physics

Contribution ID: **89**

Type: **not specified**

New results in beauty and charm spectroscopy with LHCb

Friday, June 17, 2016 11:15 AM (12 minutes)

Presenter: CARDINALE, Roberta (Universita e INFN Genova (IT))

Session Classification: Heavy Flavour

Track Classification: Heavy Flavour physics

Contribution ID: **90**

Type: **not specified**

Interpretation of recent results on spectroscopy

Friday, June 17, 2016 12:00 PM (15 minutes)

Presenter: Dr POLOSA, Antonello (Univ. of Rome, La Sapienza, Italy)

Session Classification: Heavy Flavour

Contribution ID: 91

Type: **not specified**

HF decay properties with ATLAS

Friday, June 17, 2016 4:00 PM (15 minutes)

Presenter: CARLI, Ina (Charles University (CZ))

Session Classification: Heavy Flavour

Track Classification: Heavy Flavour physics

Contribution ID: 92

Type: **not specified**

HF decay properties with CMS

Friday, June 17, 2016 4:20 PM (15 minutes)

Presenter: BARTOSIK, Nazar (Universita e INFN Torino (IT))

Session Classification: Heavy Flavour

Track Classification: Heavy Flavour physics

Contribution ID: 93

Type: **not specified**

CPV in beauty decays with LHCb

Friday, June 17, 2016 5:00 PM (15 minutes)

Presenter: MEIER, Frank (Technische Universitaet Dortmund (DE))

Session Classification: Heavy Flavour

Track Classification: Heavy Flavour physics

Contribution ID: 94

Type: **not specified**

CPV in charm decays with LHCb

Friday, June 17, 2016 5:20 PM (15 minutes)

Presenter: DERKACH, Denis (Yandex School of Data Analysis (RU))

Session Classification: Heavy Flavour

Track Classification: Heavy Flavour physics

Contribution ID: 95

Type: **not specified**

New results in semileptonic beauty decays with LHCb

Thursday, June 16, 2016 3:00 PM (15 minutes)

Presenter: DUFOUR, Laurent (Nikhef National institute for subatomic physics (NL))

Session Classification: Heavy Flavour

Track Classification: Heavy Flavour physics

Contribution ID: 96

Type: **not specified**

Predictions for $B \rightarrow K^{(*)} l^+ l^-$: problems and prospects

Friday, June 17, 2016 4:40 PM (15 minutes)

Presenter: MATIAS, Joaquim (Universitat Autònoma de Barcelona)

Session Classification: Heavy Flavour

Contribution ID: 97

Type: **not specified**

Monte Carlo developments and data comparison

Monday, June 13, 2016 4:55 PM (15 minutes)

Author: FREDERIX, Rikkert (TUM)

Presenter: FREDERIX, Rikkert (TUM)

Session Classification: QCD

Contribution ID: 98

Type: **not specified**

Measurements of vector boson with associated jet production and ratios with ATLAS

Monday, June 13, 2016 4:20 PM (12 minutes)

Author: OWEN, Rhys Edward (University of Birmingham (GB))

Presenter: OWEN, Rhys Edward (University of Birmingham (GB))

Session Classification: QCD

Contribution ID: 99

Type: **not specified**

Measurements of vector boson with associated jet production and ratios with CMS

Monday, June 13, 2016 4:37 PM (12 minutes)

Author: SEVA, Tomislav (Universite Libre de Bruxelles (BE))

Presenter: SEVA, Tomislav (Universite Libre de Bruxelles (BE))

Session Classification: QCD

Contribution ID: **100**

Type: **Talk**

Measurements of particle production, underlying event and double parton Interactions at the LHC

Monday, June 13, 2016 5:15 PM (20 minutes)

Author: KUECHLER, Jan (Bergische Universitaet Wuppertal (DE))

Presenter: KUECHLER, Jan (Bergische Universitaet Wuppertal (DE))

Session Classification: QCD

Contribution ID: **101**

Type: **Talk**

Anomalous couplings in WZ production beyond NLO QCD

Tuesday, June 14, 2016 3:30 PM (12 minutes)

Author: ROTH, Robin (KIT)

Presenter: ROTH, Robin (KIT)

Session Classification: QCD

Contribution ID: **102**

Type: **not specified**

Developments in QCD High Order calculations

Monday, June 13, 2016 4:00 PM (15 minutes)

Presenter: BOUGHEZAL, Radja (ANL)

Session Classification: QCD

Contribution ID: **103**

Type: **not specified**

QCD Results from LHCb

Tuesday, June 14, 2016 11:00 AM (15 minutes)

Author: PASSALEVA, Giovanni (INFN Florence (IT))

Presenter: PASSALEVA, Giovanni (INFN Florence (IT))

Session Classification: QCD

Contribution ID: **104**

Type: **not specified**

Measurements of pp cross sections and properties of diffractive and forward physics

Tuesday, June 14, 2016 11:20 AM (15 minutes)

Presenter: RADERMACHER, Ernst (Universita di Pisa & INFN (IT))

Session Classification: QCD

Contribution ID: **105**

Type: **Talk**

QCD results from Tevatron

Tuesday, June 14, 2016 11:40 AM (15 minutes)

Author: HESKETH, Gavin (University College London (UK))

Presenter: HESKETH, Gavin (University College London (UK))

Session Classification: QCD

Contribution ID: **106**

Type: **not specified**

Developments in jet algorithms and substructure techniques

Tuesday, June 14, 2016 2:30 PM (15 minutes)

Author: DASGUPTA, Mrinal

Presenter: DASGUPTA, Mrinal

Session Classification: QCD

Contribution ID: **107**

Type: **Talk**

Measurements of photon and jet production properties with ATLAS

Tuesday, June 14, 2016 2:50 PM (15 minutes)

Presenter: MEYER, Christopher John (University of Pennsylvania (US))

Session Classification: QCD

Contribution ID: **108**

Type: **Talk**

Measurements of photon and jet production properties with CMS

Tuesday, June 14, 2016 3:10 PM (15 minutes)

Author: FLOURIS, Giannis (University of Ioannina (GR))

Presenter: FLOURIS, Giannis (University of Ioannina (GR))

Session Classification: QCD

Contribution ID: **109**

Type: **Talk**

Impact of LHC measurements on parton density functions

Monday, June 13, 2016 5:40 PM (15 minutes)

Author: MUELLER, Katharina (Universitaet Zuerich (CH))

Presenter: MUELLER, Katharina (Universitaet Zuerich (CH))

Session Classification: QCD

Contribution ID: **110**

Type: **not specified**

Diboson and multiboson results with ATLAS

Wednesday, June 15, 2016 11:00 AM (15 minutes)

Author: BARNES, Sarah Louise (University of Manchester (GB))

Presenter: BARNES, Sarah Louise (University of Manchester (GB))

Session Classification: Electroweak

Contribution ID: 111

Type: **Talk**

Diboson and multiboson results with CMS

Wednesday, June 15, 2016 11:20 AM (15 minutes)

Author: WOODS, Nate (University of Wisconsin-Madison (US))

Presenter: WOODS, Nate (University of Wisconsin-Madison (US))

Session Classification: Electroweak

Contribution ID: 112

Type: **Talk**

Vector boson scattering and fusion results from ATLAS and CMS

Wednesday, June 15, 2016 12:00 PM (15 minutes)

Author: LI, Qiang (Peking University (CN))

Presenter: LI, Qiang (Peking University (CN))

Session Classification: Electroweak

Contribution ID: **113**

Type: **not specified**

NNLO di-boson production

Wednesday, June 15, 2016 11:40 AM (15 minutes)

Presenter: Dr KALLWEIT, Stefan (University of Mainz)

Session Classification: Electroweak

Contribution ID: 114

Type: **not specified**

Effective Field Theory and Unitarity in Vector Boson Scattering

Wednesday, June 15, 2016 12:20 PM (10 minutes)

Presenter: SEKULLA, Marco (Karlsruhe Institute of Technology)

Session Classification: Electroweak

Contribution ID: 115

Type: **not specified**

Vector Boson studies with ATLAS

Thursday, June 16, 2016 3:05 PM (15 minutes)

Author: KIVERNYK, Oleh (CEA/IRFU,Centre d'etude de Saclay Gif-sur-Yvette (FR))

Presenter: KIVERNYK, Oleh (CEA/IRFU,Centre d'etude de Saclay Gif-sur-Yvette (FR))

Session Classification: Electroweak

Contribution ID: **116**

Type: **not specified**

Vector Boson studies with CMS

Thursday, June 16, 2016 3:25 PM (15 minutes)

Author: APYAN, Aram (Massachusetts Inst. of Technology (US))

Presenter: APYAN, Aram (Massachusetts Inst. of Technology (US))

Session Classification: Electroweak

Contribution ID: 117

Type: **not specified**

Vector Boson studies in LHCb (including AFB results from all experiments)

Thursday, June 16, 2016 2:45 PM (15 minutes)

Author: SANTANA RANGEL, Murilo (Univ. Federal do Rio de Janeiro (BR))

Presenter: SANTANA RANGEL, Murilo (Univ. Federal do Rio de Janeiro (BR))

Session Classification: Electroweak

Contribution ID: **118**

Type: **not specified**

Challenges in or results from W mass measurements with ATLAS and CMS

Thursday, June 16, 2016 2:05 PM (15 minutes)

Author: VRANJES, Nenad (Institute of Physics Belgrade (RS))

Presenter: VRANJES, Nenad (Institute of Physics Belgrade (RS))

Session Classification: Electroweak

Contribution ID: **119**

Type: **Talk**

Drell-Yan production at NNLO+NNLL+PS in Geneva

Thursday, June 16, 2016 2:25 PM (15 minutes)

Presenter: TACKMANN, Frank (Deutsches Elektronen-Synchrotron (DE))

Session Classification: Electroweak

Contribution ID: 120

Type: **not specified**

NLO QCD+EW for V+jets

Thursday, June 16, 2016 3:45 PM (15 minutes)

Author: SCHOENHERR, Marek (Universitaet Zuerich (CH))

Presenter: SCHOENHERR, Marek (Universitaet Zuerich (CH))

Session Classification: Electroweak

Contribution ID: 121

Type: **not specified**

Top quark pair production in association with a jet with NLO QCD off-shell effects

Thursday, June 16, 2016 11:00 AM (15 minutes)

Presenter: KRAUS, Manfred (RWTH Aachen University)

Session Classification: Top

Contribution ID: 122

Type: **not specified**

Calibration of the top-quark Monte-Carlo mass

Tuesday, June 14, 2016 11:00 AM (15 minutes)

Presenter: MOCH, Sven-Olaf (Hamburg University)

Session Classification: Top

Contribution ID: 123

Type: **not specified**

Status of top quark mass measurements

Tuesday, June 14, 2016 11:20 AM (15 minutes)

Presenter: TOKAR, Stano (Comenius University (SK))

Session Classification: Top

Contribution ID: 124

Type: **not specified**

Top quark properties from top decays (meant to include W-helicity, FCNC, Rb)

Tuesday, June 14, 2016 11:42 AM (12 minutes)

Author: NASERI, Mohsen (School of Particles and Accelerator Inst. for Res. in Fundam. S)

Presenter: NASERI, Mohsen (School of Particles and Accelerator Inst. for Res. in Fundam. S)

Session Classification: Top

Contribution ID: 125

Type: **not specified**

Top quark pair cross section measurements in ATLAS

Thursday, June 16, 2016 11:25 AM (15 minutes)

Author: FAUCCI GIANNELLI, Michele (Royal Holloway, University of London)

Presenter: FAUCCI GIANNELLI, Michele (Royal Holloway, University of London)

Session Classification: Top

Contribution ID: 126

Type: **not specified**

Top quark pair cross section measurements in CMS

Thursday, June 16, 2016 11:47 AM (15 minutes)

Author: BROCHERO CIFUENTES, Javier (Chonbuk National University (KR))

Presenter: BROCHERO CIFUENTES, Javier (Chonbuk National University (KR))

Session Classification: Top

Contribution ID: 127

Type: **not specified**

Study of additional radiation in top quark pair events (meant to include top-pair + jets, b-jets, gap fractions)

Thursday, June 16, 2016 12:09 PM (14 minutes)

Author: ECKARDT, Christoph (Deutsches Elektronen-Synchrotron Campus Zeuthen (DE))

Presenter: ECKARDT, Christoph (Deutsches Elektronen-Synchrotron Campus Zeuthen (DE))

Session Classification: Top

Contribution ID: 128

Type: **not specified**

Spin Polarisation of $t\bar{t}$ + $\gamma\gamma$ production at NLO+PS

Thursday, June 16, 2016 2:00 PM (15 minutes)

Presenter: FREDERIX, Rikkert (TU, Munich)

Session Classification: Top

Contribution ID: 129

Type: **not specified**

Top quark pair production in association with bosons $t\bar{t}V$ ($V=W,Z,\text{photon}$)

Thursday, June 16, 2016 2:20 PM (15 minutes)

Author: ZHOU, Chen (Duke University (US))

Presenter: ZHOU, Chen (Duke University (US))

Session Classification: Top

Contribution ID: 130

Type: **not specified**

Top quark pair charge asymmetry and spin correlation measurements

Thursday, June 16, 2016 2:40 PM (15 minutes)

Author: CHWALEK, Thorsten (KIT - Karlsruhe Institute of Technology (DE))

Presenter: CHWALEK, Thorsten (KIT - Karlsruhe Institute of Technology (DE))

Session Classification: Top

Contribution ID: 131

Type: **not specified**

HATHOR for single top-quark production: Updated predictions and uncertainty estimates for single top-quark production in hadronic collisions

Thursday, June 16, 2016 3:00 PM (15 minutes)

Presenter: UWER, Peter (HU Berlin)

Session Classification: Top

Contribution ID: 132

Type: **not specified**

Single top cross section and properties measurements in ATLAS

Thursday, June 16, 2016 3:20 PM (15 minutes)

Author: TEPEL, Fabian-Phillipp (Bergische Universitaet Wuppertal (DE))

Presenter: TEPEL, Fabian-Phillipp (Bergische Universitaet Wuppertal (DE))

Session Classification: Top

Contribution ID: 133

Type: **not specified**

Single top cross section and properties measurements in CMS

Thursday, June 16, 2016 3:40 PM (15 minutes)

Author: KOMM, Matthias (Universite Catholique de Louvain (UCL) (BE))

Presenter: KOMM, Matthias (Universite Catholique de Louvain (UCL) (BE))

Session Classification: Top

Contribution ID: 134

Type: **not specified**

Resummation ambiguities in the Higgs transverse-momentum spectrum in the Standard Model and beyond

Monday, June 13, 2016 4:00 PM (15 minutes)

Presenter: BAGNASCHI, Emanuele Angelo (DESY Hamburg)

Session Classification: Higgs

Contribution ID: 135

Type: **not specified**

13 TeV non-BSM Higgs results from ATLAS

Monday, June 13, 2016 4:24 PM (15 minutes)

Presenter: SOLANS SANCHEZ, Carlos (CERN)

Session Classification: Higgs

Contribution ID: 136

Type: **not specified**

13 TeV non-BSM Higgs results from CMS

Monday, June 13, 2016 4:48 PM (15 minutes)

Presenter: STUPAK, John (Purdue University Calumet (US))

Session Classification: Higgs

Contribution ID: 137

Type: **Talk**

Charged Higgs bosons in the extended supersymmetric scenario at the LHC

Monday, June 13, 2016 5:12 PM (15 minutes)

Presenter: BANDYOPADHYAY, Priyotosh (INFN Lecce)

Session Classification: Higgs

Contribution ID: 138

Type: **not specified**

BSM H125 decays, NMSSM from ATLAS and CMS

Monday, June 13, 2016 5:36 PM (15 minutes)

Presenter: CAILLOL, Cecile Sarah (Universite Libre de Bruxelles (BE))

Session Classification: Higgs

Contribution ID: 139

Type: **not specified**

ATLAS High-mass MSSM H/A -> tautau search

Tuesday, June 14, 2016 11:00 AM (15 minutes)

Presenter: PICKERING, Mark Andrew (University of Oxford (GB))

Session Classification: Higgs

Contribution ID: **140**

Type: **not specified**

CMS ttH results

Tuesday, June 14, 2016 11:20 AM (15 minutes)

Presenter: NTOMARI, Eleni (Deutsches Elektronen-Synchrotron (DE))

Session Classification: Higgs

Contribution ID: 141

Type: **Talk**

Soft gluon resummation for associated ttH production at the LHC

Tuesday, June 14, 2016 11:40 AM (15 minutes)

Presenter: THEEUWES, Vincent (SUNY, Buffalo)

Session Classification: Higgs

Contribution ID: 142

Type: **not specified**

Charged Higgs searches from ATLAS and CMS

Wednesday, June 15, 2016 11:00 AM (15 minutes)

Presenter: OHMAN, Henrik (Uppsala University (SE))

Session Classification: Higgs

Contribution ID: 143

Type: **not specified**

High Mass neutral / MSSM Higgs searches from ATLAS

Wednesday, June 15, 2016 11:22 AM (15 minutes)

Presenter: TUNA, Alexander Naip (Harvard University (US))

Session Classification: Higgs

Contribution ID: 144

Type: **not specified**

High Mass neutral / MSSM Higgs searches from CMS

Wednesday, June 15, 2016 11:44 AM (15 minutes)

Presenter: DE WIT, Adinda (Imperial College Sci., Tech. & Med. (GB))

Session Classification: Higgs

Contribution ID: 145

Type: **not specified**

Production of heavy Higgs bosons and decay into top quarks at the LHC

Wednesday, June 15, 2016 12:06 PM (15 minutes)

Presenter: GALLER, Peter (Humboldt-Universität zu Berlin)

Session Classification: Higgs

Contribution ID: 146

Type: **Talk**

SModelS: A tool for interpreting simplified-model results from the LHC

Tuesday, June 14, 2016 2:30 PM (15 minutes)

Presenter: WALTENBERGER, Wolfgang (Austrian Academy of Sciences (AT))

Session Classification: SUSY

Contribution ID: 147

Type: **Talk**

Squark/gluino searches in hadronic channels with ATLAS

Tuesday, June 14, 2016 2:52 PM (15 minutes)

Presenter: STRUBIG, Antonia (Nikhef National institute for subatomic physics (NL))

Session Classification: SUSY

Contribution ID: 148

Type: **Talk**

Squark/gluino searches in hadronic channels with CMS

Tuesday, June 14, 2016 3:14 PM (15 minutes)

Presenter: Dr SAKUMA, Tai (University of Bristol (GB))

Session Classification: SUSY

Contribution ID: 149

Type: **Talk**

pMSSM studies with ATLAS and CMS

Tuesday, June 14, 2016 3:36 PM (15 minutes)

Presenter: FAWCETT, William James (University of Oxford (GB))

Session Classification: SUSY

Contribution ID: 150

Type: **not specified**

Status of R-parity violating supersymmetry

Thursday, June 16, 2016 11:00 AM (15 minutes)

Presenter: MONTEUX, Angelo (Rutgers University)

Session Classification: SUSY

Contribution ID: 151

Type: **Talk**

Squark/gluino in leptonic channels with ATLAS

Thursday, June 16, 2016 11:22 AM (15 minutes)

Presenter: PAGACOVA, Martina (Albert-Ludwigs-Universitaet Freiburg (DE))

Session Classification: SUSY

Contribution ID: 152

Type: **Talk**

Squark/gluino in leptonic channels with CMS

Thursday, June 16, 2016 11:44 AM (15 minutes)

Presenter: LOBANOV, Artur (Deutsches Elektronen-Synchrotron (DE))

Session Classification: SUSY

Contribution ID: 153

Type: **Talk**

Searches for Long-lived particles + RPV with ATLAS and CMS

Thursday, June 16, 2016 12:06 PM (15 minutes)

Presenter: TUCKER, Jordan (Cornell University (US))

Session Classification: SUSY

Contribution ID: 154

Type: **Talk**

A toolbox for diphoton model building

Presenter: Dr KRAUSS, Manuel E. (Bonn University)

Session Classification: SUSY

Contribution ID: 155

Type: **not specified**

Baryon number violation in supersymmetry: Neutron-antineutron oscillations as a probe beyond the LHC

Thursday, June 16, 2016 2:00 PM (15 minutes)

Presenter: MILSTEAD, David Anthony (Stockholm University (SE))

Session Classification: SUSY

Contribution ID: 156

Type: **Talk**

Third generation SUSY searches in ATLAS

Thursday, June 16, 2016 2:25 PM (15 minutes)

Presenter: SCHAFFER, Jan (Johannes-Gutenberg-Universitaet Mainz (DE))

Session Classification: SUSY

Contribution ID: 157

Type: **Talk**

Third generation SUSY searches in CMS

Thursday, June 16, 2016 2:50 PM (15 minutes)

Presenter: CHABERT, Eric (Institut Pluridisciplinaire Hubert Curien (FR))

Session Classification: SUSY

Contribution ID: 158

Type: **Talk**

Searches for Stealth or compressed SUSY with ATLAS and CMS

Thursday, June 16, 2016 3:15 PM (15 minutes)

Presenter: ZEVI DELLA PORTA, Giovanni (Univ. of California San Diego (US))

Session Classification: SUSY

Contribution ID: 159

Type: **Talk**

Searches for diboson resonances with ATLAS (VV, VH and HH, excl. diphoton resonance)

Thursday, June 16, 2016 11:00 AM (15 minutes)

Presenter: GREGERSEN, Kristian Anders (University College London (UK))

Session Classification: Exotics & Dark Matter

Contribution ID: 160

Type: **Talk**

Searches for diboson resonances with CMS (VV, VH and HH, excl. diphoton resonance)

Thursday, June 16, 2016 11:20 AM (15 minutes)

Author: DAMGOV, Jordan (Texas Tech University (US))

Presenter: DAMGOV, Jordan (Texas Tech University (US))

Session Classification: Exotics & Dark Matter

Contribution ID: **161**

Type: **Talk**

Diphoton resonance search with ATLAS

Thursday, June 16, 2016 11:40 AM (10 minutes)

Author: CHELSTOWSKA, Magda Anna (University of Michigan (US))

Presenter: CHELSTOWSKA, Magda Anna (University of Michigan (US))

Session Classification: Exotics & Dark Matter

Contribution ID: **162**

Type: **Talk**

Diphoton resonance search with CMS

Thursday, June 16, 2016 11:55 AM (10 minutes)

Author: FASANELLA, Giuseppe (Universite Libre de Bruxelles (BE))

Presenter: FASANELLA, Giuseppe (Universite Libre de Bruxelles (BE))

Session Classification: Exotics & Dark Matter

Contribution ID: **163**

Type: **not specified**

Possible di-photon signals, a theorist view

Thursday, June 16, 2016 12:10 PM (15 minutes)

Presenter: REDI, Michele (Universita e INFN, Firenze (IT))

Session Classification: Exotics & Dark Matter

Contribution ID: **164**

Type: **not specified**

First results from the MoEDAL experiment

Friday, June 17, 2016 12:10 PM (15 minutes)

Presenter: DE ROECK, Albert (CERN)

Session Classification: Exotics & Dark Matter

Contribution ID: 165

Type: **Talk**

Searches for heavy resonances with ATLAS (ll,jj,bb,tt, tb, LQ, ...)

Friday, June 17, 2016 11:20 AM (13 minutes)

Author: OKUMURA, Yasuyuki (University of Tokyo (JP))

Presenter: OKUMURA, Yasuyuki (University of Tokyo (JP))

Session Classification: Exotics & Dark Matter

Contribution ID: 166

Type: **Talk**

Searches for heavy resonances with CMS ($ll, jj, bb, tt, tb, LQ, \dots$)

Friday, June 17, 2016 11:38 AM (13 minutes)

Author: MC LEAN, Christine Angela (University of California Davis (US))

Presenter: MC LEAN, Christine Angela (University of California Davis (US))

Session Classification: Exotics & Dark Matter

Contribution ID: 167

Type: **Talk**

Searches for heavy neutrinos, LFV

Friday, June 17, 2016 11:55 AM (12 minutes)

Presenter: NANDAKUMAR, Raja (STFC - Rutherford Appleton Lab. (GB))

Session Classification: Exotics & Dark Matter

Contribution ID: **168**

Type: **Talk**

Searches for long-lived heavy particles, HSCP, monopoles (ATLAS+CMS)

Friday, June 17, 2016 4:00 PM (15 minutes)

Author: LENZ, Teresa (Hamburg University (DE))

Presenter: LENZ, Teresa (Hamburg University (DE))

Session Classification: Exotics & Dark Matter

Contribution ID: **169**

Type: **not specified**

New ideas for displaced physics @ the LHC

Friday, June 17, 2016 4:20 PM (15 minutes)

Author: KUFLIK, Eric

Presenter: KUFLIK, Eric

Session Classification: Exotics & Dark Matter

Contribution ID: 170

Type: **Talk**

Searches for dark matter production with ATLAS (MET+X)

Friday, June 17, 2016 4:40 PM (15 minutes)

Author: POTTGEN, Ruth (Stockholm University (SE))

Presenter: POTTGEN, Ruth (Stockholm University (SE))

Session Classification: Exotics & Dark Matter

Contribution ID: 171

Type: **Talk**

Searches for dark matter production with CMS (MET+X)

Friday, June 17, 2016 5:00 PM (15 minutes)

Author: Dr JAYATILAKA, Bo (Fermi National Accelerator Lab. (US))

Presenter: Dr JAYATILAKA, Bo (Fermi National Accelerator Lab. (US))

Session Classification: Exotics & Dark Matter

Contribution ID: 172

Type: **Talk**

Searches for exotic new physics with LHCb

Friday, June 17, 2016 5:20 PM (15 minutes)

Author: RACHWAL, Bartlomiej (Polish Academy of Sciences (PL))

Presenter: RACHWAL, Bartlomiej (Polish Academy of Sciences (PL))

Session Classification: Exotics & Dark Matter

Contribution ID: 173

Type: **not specified**

Semi-visible topologies at the LHC

Friday, June 17, 2016 5:40 PM (15 minutes)

Presenter: LOU, Hou Keong (UC Berkeley)

Session Classification: Exotics & Dark Matter

Contribution ID: 174

Type: **Talk**

Overview of future lepton collider plans

Friday, June 17, 2016 11:00 AM (20 minutes)

Presenter: PEREZ, Emmanuel Francois (CERN)

Session Classification: Future Colliders

Contribution ID: 175

Type: **not specified**

Overview of future pp collider plans

Friday, June 17, 2016 11:25 AM (20 minutes)

Presenter: DE ROECK, Albert (CERN)

Session Classification: Future Colliders

Contribution ID: 176

Type: **Talk**

SM and Higgs at future machines (both ee and pp)

Friday, June 17, 2016 11:50 AM (15 minutes)

Presenter: GRAY, Heather (CERN)

Session Classification: Future Colliders

Contribution ID: 177

Type: **Talk**

BSM physics at future machines (mainly pp)

Friday, June 17, 2016 12:10 PM (15 minutes)

Presenter: GOLLING, Tobias (Universite de Geneve (CH))

Session Classification: Future Colliders

Contribution ID: 178

Type: **Talk**

HL-LHC machine

Friday, June 17, 2016 4:00 PM (20 minutes)

Presenter: ARDUINI, Gianluigi (CERN)

Session Classification: Upgrade (LHC & experiments)

Contribution ID: 179

Type: **Talk**

SM and Higgs at HL-LHC

Friday, June 17, 2016 4:25 PM (18 minutes)

Presenter: KRIEGER, Peter (University of Toronto (CA))

Session Classification: Upgrade (LHC & experiments)

Contribution ID: **180**

Type: **Talk**

BSM at HL-LHC

Friday, June 17, 2016 4:48 PM (18 minutes)

Presenter: CLERBAUX, Barbara (Inter-University Institute for High Energies (BE))

Session Classification: Upgrade (LHC & experiments)

Contribution ID: **181**

Type: **Talk**

Flavour at HL-LHC

Friday, June 17, 2016 5:11 PM (18 minutes)

Presenter: PUNZI, Giovanni (Universita di Pisa & INFN (IT))

Session Classification: Upgrade (LHC & experiments)

Contribution ID: **182**

Type: **Talk**

Heavy ions at HL-LHC

Friday, June 17, 2016 5:34 PM (18 minutes)

Presenter: URAS, Antonio (Universite Claude Bernard-Lyon I (FR))

Session Classification: Upgrade (LHC & experiments)

Contribution ID: **183**

Type: **Talk**

ATLAS and CMS Data Release & Tools

Monday, June 13, 2016 4:30 PM (15 minutes)

Presenter: SOCHER, Felix (Technische Universitaet Dresden (DE))

Session Classification: Outreach

Contribution ID: **184**

Type: **Talk**

LHC Experiments Communication & Engagement with New Audiences

Monday, June 13, 2016 5:00 PM (15 minutes)

Presenter: HATZIFOTIADOU, Despina (Universita e INFN, Bologna (IT))

Session Classification: Outreach

Contribution ID: **185**

Type: **Talk**

“**STEAM: Education and Communication with Art at ATLAS and CMS**”

Monday, June 13, 2016 5:15 PM (15 minutes)

Presenter: PAOLUCCI, Pierluigi (Universita e INFN of Napoli (IT))

Session Classification: Outreach

Contribution ID: **186**

Type: **Talk**

LHC Masterclasses. Bringing Particle Physics into the Classroom: Present and Future

Monday, June 13, 2016 4:45 PM (15 minutes)

Presenter: GLIGOROV, Vladimir (Lab. Phys. Nucl. Hautes Energies (FR))

Session Classification: Outreach

Contribution ID: **187**

Type: **Talk**

Worldwide Outreach

Monday, June 13, 2016 4:15 PM (15 minutes)

Presenter: BECK, Hans Peter (Universitaet Bern (CH))

Session Classification: Outreach

Contribution ID: **188**

Type: **Talk**

CERN: Outreach in the International Context

Monday, June 13, 2016 4:00 PM (15 minutes)

Presenter: Dr SCHMELING, Sascha (CERN)

Session Classification: Outreach

Contribution ID: 191

Type: **Talk**

Soft Gluon Resummation for associated $t\bar{t}H$ Production at the LHC

In this talk the computation of soft gluon resummation for $pp \rightarrow t\bar{t}H$ will be presented. The absolute threshold resummation is carried out at NLL accuracy. This is the first application for the Mellin space technique to $2 \rightarrow 3$ type processes. The impact of resummation on the numerical prediction for the total cross section and the theoretical uncertainties will be presented.

Authors: KULESZA, Anna (University of Muenster); MOTYKA, Leszek (Jagiellonian University); STEBEL, Tomasz (Jagiellonian University); THEEUWES, Vincent (SUNY, Buffalo)

Presenter: THEEUWES, Vincent (SUNY, Buffalo)

Session Classification: Higgs

Track Classification: Higgs physics in the Standard Model and beyond

Contribution ID: 199

Type: **Poster**

The energy dependence of the tetraquark production cross section

We develop a very first model to describe the energy dependence of the tetraquark production cross section in proton-proton collisions. The model implements a mixture of two different formalisms. It uses the Double Parton Scattering (DPS) to describe the production of two quark pairs (a $q_1 \bar{q}_1$ plus a $q_2 \bar{q}_2$) and uses the Color Evaporation Model (CEM) to describe the coalescence of the two quark pairs in a compact tetraquark state. After using the experimental value of the X(3872) production cross section announced by the CMS collaboration we fixed the parameters of our model at 7 TeV and make predictions for 14 TeV. We also make predictions for the production cross section of the T_{4c} , a tetraquark composed of 2 $c\bar{c}$ pairs, for the energies of the LHC.

Authors: CAZAROTO, Erike (University of Sao Paulo); CARVALHO, Fabiana (Federal University of Sao Paulo); NAVARRA, Fernando (University of Sao Paulo); GONÇALVES, Victor (Universidade Federal de Pelotas)

Presenter: CAZAROTO, Erike (University of Sao Paulo)

Session Classification: Poster Session

Track Classification: Heavy Flavour physics

Contribution ID: 200

Type: **Poster**

Design and Performance Tests of a Prototype Micromegas Chamber for High Rate Environments in the Forward Region of LHC Detectors

In recent years, micropattern gaseous detectors received significant attention in the development of precision and cost-effective tracking detectors in nuclear and high energy physics experiments. The important task for these detectors is not only a precise position measurement, but also the determination of the incoming angle of traversing particles in high rate environments, present for example in the forward region of LHC detectors. One possible realization, using a single Micromegas readout layer, is the so-called Micro-TPC method. However, its angle resolution is very limited, in particular for perpendicular incident beams. A pair of two MicroMegas detectors would allow for a precise angle measurement, however require a relatively large volume.

In this presentation, the design and the performance of a prototype detector based on Micromegas technology with two detection layers in a common gas volume will be discussed, suited for small spatial volumes in high rate environments at LHC detectors. Each detection layer has an active area of $9 \times 9 \text{ cm}^2$ with a two-dimensional strip readout and is separated by a common gas region with a height of 14 mm. An additional mesh working as an cathode is placed in the middle of the common gas volume separating it into two individual cells. This setup allows for a precise angle reconstruction of incoming particles with a precision of 0.5° using a detector with reduced material budget, compared to current detector designs. In addition, we present first results of performance studies on the prototype detectors based on cosmic muon measurements at the cosmic ray measurement facility at the University of Mainz. It should be noted that this design reduces multiple scattering with makes the detector also suitable for the measurement of low energy beam experiments.

Author: SCHOTT, Matthias (Johannes-Gutenberg-Universitaet Mainz (DE))

Co-authors: DUDDER, Andreas Christian (Johannes-Gutenberg-Universitaet Mainz (DE)); BRICKWEDDE, Bernard (Johannes-Gutenberg-Universitaet Mainz (DE))

Presenter: BRICKWEDDE, Bernard (Johannes-Gutenberg-Universitaet Mainz (DE))

Session Classification: Poster Session

Track Classification: Upgrade plans and future colliders

Contribution ID: 201

Type: **Talk**

Baryon number violation in supersymmetry: Neutron-antineutron oscillations as a probe beyond the LHC

Baryon number violation is required for baryogenesis and features in a number of topical extensions of the Standard Model. In this talk, experimental results which are sensitive to baryon number violation are interpreted within R-parity violating supersymmetry scenarios with non-zero baryon number violating couplings and a simplified sparticle mass spectra. Processes with $\Delta B = 2$ which would be expected to allow neutron-antineutron oscillations are considered. Results from the LHC experiments are used, as are precision measurements of flavour transitions and CP-violation. The relative contributions of the different experimental observables in constraining $\Delta B = 2$ processes are studied. The impact of a new proposed search for neutron-antineutron oscillations at the ESS is also quantified.

Author: MILSTEAD, David Anthony (Stockholm University (SE))

Presenter: MILSTEAD, David Anthony (Stockholm University (SE))

Session Classification: SUSY

Track Classification: Searches for Supersymmetry

Contribution ID: 202

Type: **Talk**

A comparison of NNLO QCD results for W/Z+jet with the ATLAS and CMS 7 TeV results

We present a detailed comparison of next-to-next-to-leading order (NNLO) QCD predictions for the W+jet and Z+jet processes with 7 TeV experimental data from ATLAS and CMS. We observe excellent agreement between theory and data for most studied observables, which span several orders of magnitude in both cross section and energy. For some observables, such as the HT distribution, the NNLO QCD corrections are essential for resolving existing discrepancies between theory and data.

Author: BOUGHEZAL, Radja (Argonne National Laboratory)

Presenter: BOUGHEZAL, Radja (Argonne National Laboratory)

Track Classification: QCD physics at hadron colliders

Contribution ID: 203

Type: **Talk**

13 TeV Production results with LHCb

The LHC's proton-proton collisions at an unprecedented energy of 13 TeV open a new era in searches for new particles and precision tests of the Standard Model. The measurements of heavy flavour production can be used to precisely test the knowledge of Quantum Chromodynamics (QCD), ascertain the future sensitivity of LHCb analyses at 13 TeV and quantify SM backgrounds in new physics searches. Using the very first proton-proton collision data of the LHC run II, LHCb performed cross-section measurements of heavy boson, quarkonia, beauty and charm productions as a function of transverse momentum and rapidity within the LHCb acceptance. In this talk, the recent LHCb production results at 13 TeV are presented.

Author: NEUNER, Max (Ruprecht-Karls-Universitaet Heidelberg (DE))

Presenter: NEUNER, Max (Ruprecht-Karls-Universitaet Heidelberg (DE))

Session Classification: Heavy Flavour

Track Classification: Heavy Flavour physics

Contribution ID: 209

Type: **Talk**

The MoEDAL Experiment at the LHC - a New Light on the TeV Discovery Frontier.

In 2010 the MoEDAL experiment at the Large Hadron Collider (LHC) was unanimously approved as the LHC's 7th experiment by CERN's Research Board, to start data taking in 2015. MoEDAL is a pioneering experiment designed to search for highly ionizing avatars of new physics such as magnetic monopoles or massive (pseudo-)stable charged particles. Its ground-breaking physics program defines a number of scenarios that yield potentially revolutionary insights into such foundational questions as: are there extra dimensions or new symmetries; what is the mechanism for the generation of mass; does magnetic charge exist; what is the nature of dark matter; and, how did the big-bang develop. MoEDAL's purpose is to meet such far-reaching challenges at the frontier of the field. The innovative MoEDAL detector - that was installed for the first time in the winter of 2014-15 - employs unconventional detector methodologies tuned to the prospect of discovery physics. The largely passive MoEDAL detector, deployed at Point 8 on the LHC ring, has a dual nature. The first results from MoEDAL test deployments will be presented.

Author: PINFOLD, James (University of Alberta (CA))

Co-author: THE MOEDAL COLLABORATION, LHC (CERN)

Presenters: PINFOLD, James (University of Alberta (CA)); THE MOEDAL COLLABORATION, LHC (CERN)

Session Classification: Exotics & Dark Matter

Track Classification: New Exotic phenomena and Dark Matter searches

Contribution ID: 212

Type: **Talk**

Test of the Standard Model and Search for New Physics Using Unitarity Triangle Fits

The Standard Model of the elementary particles (SM) describes the quark mixing using the Cabibbo-Kobayashi-Maskawa (CKM) matrix. Elements of this matrix can be constrained using the experimental results combined with theoretical calculations. With new analyses of the full Run 1 dataset performed by the LHC experiments, in particular LHCb, the CKM picture can be tested with great precision, and very precise SM predictions can be obtained from global analyses. We present here the results of the latest global SM analysis performed by the UFit collaboration. We also present an update of the UT analysis beyond the SM. An extensive study of the CKM angle γ is also presented.

Authors: BEVAN, Adrian (University of London (GB)); SCHIAVI, Carlo (Universita e INFN Genova (IT)); DERKACH, Denis (Yandex School of Data Analysis (RU)); PARODI, Fabrizio (Università degli Studi e INFN Genova (IT)); MARTINELLI, Guido (Universita e INFN, Roma I (IT)); SILVESTRINI, Luca (INFN Rome); BONA, Marcella (Queen Mary University of London (UK)); CIUCHINI, Marco (INFN Sezione di Roma Tre); PIERINI, Maurizio (CERN); VAGNONI, Vincenzo (CERN and INFN Bologna); SORDINI, Viola (Universite Claude Bernard-Lyon I (FR)); STOCCHI, achille (LAL CNRS Universite Paris Sud); TARANTINO, cecilia (University Roma Tre)

Presenter: DERKACH, Denis (Yandex School of Data Analysis (RU))

Session Classification: Heavy Flavour

Track Classification: Heavy Flavour physics

Contribution ID: 213

Type: **Poster**

Measurements of very forward particles production spectra at LHC: the LHCf experiment

The main aim of the LHC forward (LHCf) experiment is to provide precise measurements of the particles production spectra in the forward region. These calibration data are very important for the tuning of hadronic interaction models used by ground-based cosmic rays experiments. LHC is the most suitable place where we can perform these measurements because proton-proton collisions at $\sqrt{s} = 14$ TeV is equivalent to the interaction of a 10^{17} eV cosmic ray with the atmosphere. In order to do that, LHCf makes use of two small sampling calorimeters installed at ± 140 m from LHC IP1, so that it can detect neutral particles produced by p-p collisions having pseudo-rapidity $\eta > 8.4$.

In the past years LHCf acquired data from p-p collisions at different energies ($\sqrt{s} = 0.9$ TeV, 2.76 TeV, 7 TeV and 13 TeV) and from p-Pb collisions ($\sqrt{s_{NN}} = 5.02$ TeV). In this talk, we would like to present the analysis results published by the collaboration, relative to neutrons, photons and π^0 production spectra, compared with models predictions. In particular we will discuss about π^0 , the best probe LHCf can use to study forward physics, which offers the possibility to study p_T and p_z spectra, to test Feynman scaling hypothesis and to estimate the nuclear modification factor. Finally, preliminary results relative to photon energy spectra at $\sqrt{s} = 13$ TeV will be presented.

Author: BERTI, Eugenio (Universita e INFN, Firenze (IT))

Co-authors: TIBERIO, Alessio (Universita e INFN, Firenze (IT)); MATSUBAYASHI, Eri (Nagoya University (JP)); CASTELLINI, Guido (Dipartimento di Fisica); MENJO, Hiroaki (Nagoya University (JP)); KASAHARA, Katsuaki (Waseda University (JP)); D'ALESSANDRO, Lel (Universita e INFN, Firenze (IT)); BONECHI, Lorenzo (Universita e INFN, Firenze (IT)); UENO, Mana (Nagoya University (JP)); BONGI, Massimo (Universita e INFN, Firenze (IT)); SAKURAI, Nobuyuki (Nagoya University (JP)); ADRIANI, Oscar (Universita e INFN, Firenze (IT)); PAPINI, Paolo (INFN); ZHOU, Qidong (Nagoya University (JP)); RICCIARINI, Sergio Bruno (Universita e INFN, Firenze (IT)); TORII, Shoji (Waseda University (JP)); TAMURA, Tadahisa (Kanagawa University (JP)); IWATA, Taiki (Waseda University (JP)); SAKO, Takashi (Nagoya University (JP)); SUZUKI, Takuya (Waseda University (JP)); MURAKI, Yasushi (STE-laboratory, Nagoya University (JP)); ITO, Yoshitaka (Nagoya University (JP)); MAKINO, Yuya (Nagoya University (JP))

Presenter: BERTI, Eugenio (Universita e INFN, Firenze (IT))

Session Classification: Poster Session

Track Classification: LHC experiments: performance and potential

Contribution ID: 214

Type: **Talk**

Charged Higgs bosons in the extended supersymmetric scenario at the LHC

Charged Higgs boson certainly is a proof of physics beyond the standard model. LHC has been searching for the charged Higgs boson in the standard decay modes of tau, nu. The doublet like charged Higgs boson in 2HDM and MSSM can be produced either from top quark decay or b gluon fusion for light and heavy charged Higgs bosons. The mass limits coming from these standard productions and decay channels are often can be changed due to a different decay modes as well different production processes. Specially when the charged Higgs boson is in the triplet representation of $SU(2)$, it does not couple to fermions and can decay to Z, W^\pm bosons. This particular vertex also give rise to vector boson fusion to charged Higgs boson. Similarly presence of light pseudoscalar in NMSSM or TNMSSM, give rise to additional decay mode to a light pseudoscalar and W^\pm . We discuss such phemenologies at the LHC and how to distinguish different possible representation in which Higgs bosons can stay.

Author: BANDYOPADHYAY, Priyotosh (INFN - National Institute for Nuclear Physics)

Presenter: BANDYOPADHYAY, Priyotosh (INFN - National Institute for Nuclear Physics)

Session Classification: Higgs

Track Classification: Higgs physics in the Standard Model and beyond

Contribution ID: 215

Type: **Talk**

Anomalous couplings in WZ production beyond NLO QCD

We study WZ production with anomalous couplings (AC) at approximate NNLO QCD using the LoopSim method in combination with the Monte Carlo program VBFNLO. Higher order corrections to WZ production are dominated by additional hard jet radiation. Those contributions are insensitive to AC and should thus be suppressed in analyses. We do this using a dynamical jet veto based on the transverse energy of the QCD and EW final state particles. This removes jet dominated events without introducing problematic logs like a fixed p_T jet veto.

Authors: ZEPPENFELD, Dieter (Karlsruhe Institute of Technology); CAMPANARIO, Francisco (Karlsruhe Institute of Technology); ROTH, Robin (Karlsruher Institute of Technology); SAPETA, Sebastian (CERN)

Presenter: ROTH, Robin (Karlsruher Institute of Technology)

Session Classification: QCD

Track Classification: QCD physics at hadron colliders

Contribution ID: 216

Type: **Poster**

The alignment of the ATLAS Inner Detector in Run-2

ATLAS is a multipurpose experiment at the LHC proton-proton collider. Its physics goals require high resolution, unbiased measurement of all charged particle kinematic parameters. These critically depend on the layout and performance of the tracking system and the quality of its offline alignment.

For the LHC Run II, the system has been upgraded with the installation of a new pixel layer, the Insertable B-layer (IBL). Offline track alignment of the ATLAS tracking system has to deal with about 700,000 degrees of freedom (DoF) defining its geometrical parameters, representing a considerable numerical challenge in terms of both CPU time and precision. An outline of the track based alignment approach and its implementation within the ATLAS software will be presented. Special attention will be paid to integration to the alignment framework of the IBL. Techniques allowing to pinpoint and eliminate tracking systematics due to alignment as well as strategies to deal with time-dependent variations will be briefly covered. The results from the 2015 data taking campaigns will be discussed in which a mechanical distortion of the IBL staves has been observed and preliminary results will be presented detailing how this effect is mitigated.

Author: RIPELLINO, Giulia (KTH Royal Institute of Technology (SE))

Presenter: RIPELLINO, Giulia (KTH Royal Institute of Technology (SE))

Session Classification: Poster Session

Track Classification: LHC experiments: performance and potential

Contribution ID: 218

Type: **Poster**

ATLAS LAr Calorimeter Performance in Run 1 and Run 2

The ATLAS detector was designed and built to study proton-proton collisions produced at the LHC at centre-of-mass energies up to 14 TeV and instantaneous luminosities up to $10^{34} \text{ cm}^{-2} \text{ s}^{-1}$. Liquid argon (LAr) sampling calorimeters are employed for all electromagnetic calorimetry in the pseudo-rapidity region $|\eta| < 3.2$, and for hadronic calorimetry in the region from $|\eta| = 1.5$ to $|\eta| = 4.9$. In the first LHC run a total luminosity of 27 fb^{-1} has been collected at center-of-mass energies of 7-8 TeV. Following a period of detector consolidation during a long shutdown, Run-2 started in 2015 with approximately 3.9 fb^{-1} of data at a center-of-mass energy of 13 TeV recorded in this year. The well calibrated and highly granular Liquid Argon Calorimeter achieved its design values both in energy measurement as well as in direction resolution, which was a main ingredient for the successful discovery of a Higgs boson in the di-photon decay channel. This contribution will give an overview of the detector operation, monitoring and data quality, as well as the achieved performance, including the calibration and stability of the electromagnetic scale, response uniformity and time resolution.

Author: KUWERTZ, Emma Sian (University of Victoria (CA))

Presenter: KUWERTZ, Emma Sian (University of Victoria (CA))

Session Classification: Poster Session

Track Classification: LHC experiments: performance and potential

Contribution ID: 219

Type: **Poster**

Design of the ATLAS New Small Wheel Gas Distribution System for the Micromegas Detector Modules

Large size resistive Micromegas (MM) detectors will be employed for the first time in high-energy physics experiments for the Phase I upgrade of the ATLAS Muon Spectrometer at the LHC. The current innermost stations of the muon end-cap system, the Small Wheel, will be upgraded to retain the good precision tracking and trigger capabilities in the high background environment expected with the upcoming luminosity and energy increase of the LHC. Along with the small-strip Thin Gap Chambers (sTGC) the “New Small Wheel” will be equipped with eight layers of MM detectors arranged in multilayers of two quadruplets, for a total of about 1200 m² detection planes. All quadruplets have trapezoidal shapes with surface areas between 2 and 3m². Both MM and sTGC systems will independently provide trigger and tracking capabilities.

An individual gas distribution system has to be appropriately designed in order to ensure the necessary gas renewal rate among the MM layers. In this work we present and describe the methodology, the particular calculations and simulations to achieve the appropriate gas flow rates ensuring a uniform gas distribution among the same type of modules. The majority of the components used are in large multiplicity so space saving criteria is taking into account and simplicity on the performance with respect to the total cost as well.

An appropriate simulation program has been developed for studying the overall gas system determining the gauge pressure, flow rate in the crucial points and branches, respectively. Moreover, a number of particular extensive studies are implemented: a) A new designed manifold, “trident” type, for splitting the gas flow to the three-layer inlets of each module into fixed ratios. b) A novel-alternative method for measuring the gas leak rate of the modules, called Flow Rate Loss (FRL), has been developed and tested, for the mass production in the framework of quality checking-quality assurance. c) A calibration method is also proposed, based on the emulated leak branches for a variety of low cost medical hypodermic needles. An overall prototype configuration, implemented at the NTUA laboratory and based on the Lock-in Amplifier technique to be used in conjunction with the gas leak test via the FRL method is presented. The obtained performances, by means of sensitivity and S/N ratio improvement, are also discussed.

Author: GAZIS, Evangelos (National Technical Univ. of Athens (GR))

Presenter: GAZIS, Evangelos (National Technical Univ. of Athens (GR))

Session Classification: Poster Session

Track Classification: LHC experiments: performance and potential

Contribution ID: 220

Type: **Poster**

A “system on chip” (SOC) front end ASIC for the ATLAS New Small Wheels (NSW) and future upgrades

The ATLAS New Small Wheels (NSW) Phase I Muon System upgrade will use Micromegas and small-strip Thin Gap Chambers (sTGC) as both trigger and precision tracking detectors. A new ASIC, the VMM, is being developed for the front end of both detector technologies. The VMM is a sophisticated ASIC, System on Chip (SOC), providing digitized amplitude and time information as well as independent trigger paths for both detector systems. We describe the details of the properties of the VMM ASIC, its programmability, its proposed use with the NSW electronics trigger and readout architecture, and possible use in future upgrades. As an example the application of the VMM in the ATLAS HL-LHC muon upgrade will be presented. The similarity to the Phase I system and the resulting benefits will be stressed.

Author: GAZIS, Evangelos (National Technical Univ. of Athens (GR))

Presenter: GAZIS, Evangelos (National Technical Univ. of Athens (GR))

Session Classification: Poster Session

Track Classification: LHC experiments: performance and potential

Contribution ID: 221

Type: **Poster**

Physics performances with the new ATLAS Level-1 Topological trigger in Run 2

The ATLAS trigger system aims at reducing the 40 MHz protons collision event rate to a manageable event storage rate of 1 kHz, preserving events with valuable physics meaning. The Level-1 trigger is the first rate-reducing step in the ATLAS trigger system, with an output rate of 100 kHz and decision latency of less than 2.5 micro seconds. It is composed of the calorimeter trigger, muon trigger and central trigger processor. During the last upgrade, a new electronics element was introduced to Level-1: L1Topo, the Topological Processor System. It will make it possible to use detailed realtime information from the Level-1 calorimeter and muon triggers, processed in individual state of the art FPGA processors to determine angles between jets and/or leptons and calculate kinematic variables based on lists of selected/sorted objects. Over hundred VHDL algorithms are producing trigger outputs to be incorporated into the central trigger processor. Such information will be essential to improve background rejection and increase the significance of a large spectrum of the ATLAS physics measurements. An overview of the firmware implementation, algorithms performance and their impact over physics results will be illustrated.

Author: ARTZ, Sebastian (Johannes-Gutenberg-Universitaet Mainz (DE))

Presenter: ARTZ, Sebastian (Johannes-Gutenberg-Universitaet Mainz (DE))

Session Classification: Poster Session

Track Classification: LHC experiments: performance and potential

Contribution ID: 222

Type: **Poster**

Triggering on Hadronic Signatures with the ATLAS Detector

Hadronic signatures are from the most promising in the high energy physics analysis program, broadly used for both Standard Model measurements and searches for new physics. These signatures include generic quark and gluon jets as well as jets originating from b-quarks or tau leptons decaying hadronically. Additionally missing transverse momentum from non-interacting particles provide an interesting probe to search for new physics interactions beyond the Standard Model. Developing trigger selections that target on these signatures is a huge challenge in the hadron colliders, due to the enormous rates these signatures contribute.

This talk presents an overview of how we trigger on hadronic signatures on the ATLAS experiment of the LHC, outlining the challenges of hadronic object trigger reconstruction and describing the improvements performed for the Run-2 LHC data-taking. The performance in Run-2 data is shown. We also discuss further critical developments envisaged for the rest for the Run-2 data taking. These include two new hardware components for topological selections at L1 and full-scan tracking in the input of the HLT.

Author: BURR, Jonathan (University of Oxford (GB))

Presenter: BURR, Jonathan (University of Oxford (GB))

Session Classification: Poster Session

Track Classification: LHC experiments: performance and potential

Contribution ID: 223

Type: **Poster**

ATLAS Trigger and Data Acquisition Upgrades for High Luminosity LHC

The ATLAS experiment at the LHC is planning a second phase of upgrades to prepare for the “High Luminosity LHC”, a 4th major run due to start in 2026. In order to deliver an order of magnitude more data than previous runs, 14 TeV protons will collide with an instantaneous luminosity of $7.5 \times 10^{34} \text{ cm}^{-2}\text{s}^{-1}$, resulting in much higher pileup and data rates than the current experiment was designed to handle. While this extreme scenario is essential to realise the physics programme, it is a huge challenge for the detector, trigger, data acquisition and computing. The detector upgrades themselves also present new requirements and opportunities for the trigger and data acquisition system. Initial upgrade designs for the trigger and data acquisition system are shown, including the real time low latency hardware trigger, hardware-based tracking, the high throughput data acquisition system and the commodity hardware and software-based data handling and event filtering. The motivation, overall architecture and expected performance are explained. Some details of the key components are given. Open issues and plans are discussed.

Author: ALLEN, Benjamin William (University of Oregon (US))

Presenter: ALLEN, Benjamin William (University of Oregon (US))

Session Classification: Poster Session

Track Classification: LHC experiments: performance and potential

Contribution ID: 226

Type: **Poster**

The design of a fast Level-1 track trigger for the High Luminosity Upgrade of ATLAS

The high-luminosity upgrade of the LHC will increase the rate of the proton-proton collisions by approximately a factor of 5 with respect to the initial LHC design. The ATLAS experiment will upgrade consequently, increasing its robustness and selectivity in the expected high radiation environment. In particular, the earliest, hardware based, ATLAS trigger stage (“Level 1”) will require higher rejection power, still maintaining efficient selection on many and various physics signatures. The key ingredient is the possibility of extracting tracking information from the brand new full-silicon detector and use it for the decision process. While fascinating, this solution poses a big challenge in the choice of the architecture, due to the reduced latency available at this trigger level (few tens of micro-seconds) and the high expected working rates (order of MHz). In this paper, we review the design possibilities of such a system in a potential new trigger and readout architecture, and present the performance resulting from a detailed simulation of possible hardware-based algorithms, to be implemented in the context of Associative Memories and FPGA technologies, as foreseen by R&D plans on these devices.

Author: GRADIN, Per Olov Joakim (Uppsala University (SE))

Presenter: GRADIN, Per Olov Joakim (Uppsala University (SE))

Session Classification: Poster Session

Track Classification: LHC experiments: performance and potential

Contribution ID: 230

Type: **Poster**

Performance of the ATLAS hadronic Tile calorimeter

The Tile Calorimeter (TileCal) of the ATLAS experiment at the LHC is the central hadronic calorimeter designed for energy reconstruction of hadrons, jets, tau-particles and missing transverse energy. TileCal is a scintillator-steel sampling calorimeter and it covers the region of pseudorapidity < 1.7 . The scintillation light produced in the scintillator tiles is transmitted by wavelength shifting fibers to photomultiplier tubes (PMTs). The analog signals from the PMTs are amplified, shaped and digitized by sampling the signal every 25 ns. The TileCal frontend electronics reads out the signals produced by about 10000 channels measuring energies ranging from ~ 30 MeV to ~ 2 TeV. Each stage of the signal production from scintillation light to the signal reconstruction is monitored and calibrated.

The performance of the calorimeter have been studied in-situ employing cosmic ray muons and a large sample of proton-proton collisions acquired during the operations of the LHC. Prompt isolated muons of high momentum from electroweak bosons decays are employed to study the energy response of the calorimeter at the electromagnetic scale. The calorimeter response to hadronic particles is evaluated with a sample of isolated hadrons and the modelling of the response by the Monte Carlo simulation is discussed. The calorimeter timing calibration and resolutions are studied with a sample of multijets events.

Results on the calorimeter operation and performance are presented, including the calibration, stability, absolute energy scale, uniformity and time resolution. These results show that the TileCal performance is within the design requirements and has given essential contribution to reconstructed objects and physics results.

Author: BARTOS, Pavol (Comenius University (SK))

Presenter: BARTOS, Pavol (Comenius University (SK))

Session Classification: Poster Session

Track Classification: LHC experiments: performance and potential

Contribution ID: 231

Type: **Poster**

Upgrade of the ATLAS hadronic Tile calorimeter for the High luminosity LHC

The Tile Calorimeter (TileCal) is the hadronic calorimeter covering the central region of the ATLAS detector at the LHC. It is a sampling calorimeter consisting of alternating thin steel plates and scintillating tiles.

Wavelength shifting fibers coupled to the tiles collect the produced light and are read out by photomultiplier tubes. An analog sum of the processed signal of several photomultipliers serves as input to the first level of trigger. Photomultiplier signals are then digitized and stored on detector and are only transferred off detector once the first trigger acceptance has been confirmed.

The Large Hadron Collider (LHC) has envisaged a series of upgrades towards a High Luminosity LHC (HL-LHC) delivering five times the LHC nominal instantaneous luminosity. The ATLAS Phase II upgrade, in 2024, will accommodate the detector and data acquisition system for

the HL-LHC. In particular, TileCal will undergo a major replacement of its on- and off-detector electronics.

All signals will be digitized and then transferred directly to the off-detector electronics, where the signals

will be reconstructed, stored, and sent to the first level of trigger at a rate of 40 MHz. This will provide

better precision of the calorimeter signals used by the trigger system and will allow the development of more

complex trigger algorithms. Changes to the electronics will also contribute to the reliability and redundancy

of the system.

Three different frontend options are presently being investigated for the upgrade and a final solution will be chosen after extensive laboratory and test beam studies that are in progress. A hybrid

demonstrator module is being developed using the new electronics while conserving compatibility with the

current system. The demonstrator is undergoing extensive testing and is planned for insertion in ATLAS during

the next possible opening at the end of 2016.

Author: HARKUSHA, Siarhei (Belarus Academy of Sciences (BY))

Presenter: HARKUSHA, Siarhei (Belarus Academy of Sciences (BY))

Session Classification: Poster Session

Track Classification: LHC experiments: performance and potential

Contribution ID: 232

Type: **Talk**

Top Quark Pair Production in Association with a Jet with NLO QCD Off-Shell Effects at the LHC

We present a complete description of top quark pair production in association with a jet in the dilepton channel at NLO QCD. Our calculation includes all non-resonant diagrams, interferences, and off-shell effects of the top quark and as well non-resonant and off-shell contributions due to the finite W gauge boson width. This calculation constitutes the first fully realistic NLO computation for top quark pair production with a final state jet in hadronic collisions. We also present numerical results for the total cross section and differential distributions for the LHC at 8 TeV.

Authors: BEVILACQUA, Giuseppe (Istituto Nazionale Fisica Nucleare (IT)); HARTANTO, Heribertus Bayu (RWTH Aachen University); WOREK, Malgorzata (Bergische Universitaet Wuppertal (DE)); Mr KRAUS, Manfred (RWTH Aachen)

Presenter: Mr KRAUS, Manfred (RWTH Aachen)

Session Classification: Top

Track Classification: Top Quark physics

Contribution ID: 233

Type: **Talk**

Effective Field Theory and Unitarity in Vector Boson Scattering

Weak vector boson scattering at high energies will be one of the key measurements in current and upcoming LHC runs. It is most sensitive to any new physics associated with electroweak symmetry breaking. However, a conventional EFT analysis will fail at high energies.

To address this problem, we present a parameter-free prescription valid for arbitrary perturbative and non-perturbative models: the T-matrix unitarization. We describe its implementation as an asymptotically consistent reference model matched to the low-energy effective theory.

We study typical observables of vector-boson scattering at the LHC in our unitarized framework. For many strongly-coupled models like composite Higgs models, dimension-8 operators might be actually the leading operators. In addition to those longitudinal and transversal dimension eight EFT operators, the effects of generic tensor and scalar resonances within a simplified model are considered.

Author: SEKULLA, Marco (Karlsruhe Institute of Technology)

Co-authors: REUTER, Jürgen (DESY Hamburg, Germany); OHL, Thorsten (Würzburg University); KILIAN, Wolfgang (Siegen University)

Presenter: SEKULLA, Marco (Karlsruhe Institute of Technology)

Session Classification: Electroweak

Track Classification: Electroweak physics at hadron colliders

Contribution ID: 234

Type: **Talk**

An NLO+PS generator for top pair production and decay including non-resonant and interference effects

Tuesday, June 14, 2016 3:45 PM (12 minutes)

Authors: OLEARI, Carlo (Universita & INFN, Milano-Bicocca (IT)); LINDERT, Jonas; NASON, Paolo (Universita & INFN, Milano-Bicocca (IT)); POZZORINI, Stefano Augusto (Universitaet Zuerich (CH)); JEZO, Tomas (Milano Bicocca)

Presenter: JEZO, Tomas (Milano Bicocca)

Session Classification: QCD

Track Classification: QCD physics at hadron colliders

Contribution ID: 235

Type: **Talk**

nCTEQ15 nuclear parton distributions with uncertainties

We present the first official release of the nCTEQ nuclear parton distribution functions (nPDFs) with errors. The main addition to the previous nCTEQ PDFs is the introduction of PDF uncertainties based on the Hessian method. Another important improvement is the inclusion of pion production data from RHIC giving us a handle to constrain gluon PDF. In this presentation we briefly discuss the framework of our analysis and concentrate on the comparison of our results with those of other groups providing nPDFs. Additionally we present predictions for selected results from the LHC heavy ion collisions.

Authors: KUSINA, Aleksander (LPSC Grenoble); CLARK, Benjamin; KEPPEL, Cynthia (Jefferson Lab); Dr LYONNET, Florian (SMU); OLNESS, Fred (Southern Methodist University); SCHIENBEIN, Ingo (Universite Joseph Fourier); MORFIN, Jorge G. (Fermilab); OWENS, Joseph (Florida State University); KOVARIK, Karol; JEZO, Tomas (Milano Bicocca)

Presenter: JEZO, Tomas (Milano Bicocca)

Session Classification: Heavy Ion

Track Classification: Physics of Heavy Ion collisions

Contribution ID: 236

Type: **Poster**

Electroweak top-quark pair production at the LHC with Z' bosons to NLO QCD in POWHEG

We present the calculation of the NLO QCD corrections to the electroweak production of top-antitop pairs at the CERN LHC in the presence of a new neutral gauge boson. The corrections are implemented in the parton shower Monte Carlo program POWHEG. Standard Model (SM) and new physics interference effects are properly taken into account. QED singularities, first appearing at this order, are consistently subtracted. Numerical results are presented for SM and Z' total cross sections and distributions in invariant mass, transverse momentum, azimuthal angle and rapidity of the top-quark pair. The remaining theoretical uncertainty from scale and PDF variations is estimated, and the potential of the charge asymmetry to distinguish between new physics models is investigated for the Sequential SM and a leptophobic topcolor model.

Authors: Dr LYONNET, Florian (SMU); SCHIENBEIN, Ingo (Universite Joseph Fourier); KLASSEN, Michael; BONCIANI, Roberto (Dipartimento di Fisica); JEZO, Tomas (Milano Bicocca)

Presenter: JEZO, Tomas (Milano Bicocca)

Session Classification: Poster Session

Track Classification: New Exotic phenomena and Dark Matter searches

Contribution ID: 237

Type: **Talk**

A toolbox for diphoton model building

Hints for a new resonance at 750 GeV from ATLAS and CMS have triggered a significant amount of attention and many new models have been considered to explain the excess. Here we focus on several proposed renormalisable weakly-coupled models and revisit results given in the literature. We point out several physically important subtleties which are often missed or neglected. Accordingly, we motivate the use of automatised tools which can address those points raised, making simplifying assumptions unnecessary. To facilitate the study of the excess, we have extended the SARAH framework to automatically include crucial higher order corrections to the diphoton and digluon decay rates for both CP-even and CP-odd scalars. We have further extended the model database by 40 different models proposed in the literature to explain the excess. Finally, we demonstrate the power of the entire setup by presenting the study of a new supersymmetric model that accommodates the diphoton excess.

Authors: VOIGT, Alexander (DESY Hamburg); VICENTE MONTESINOS, Avelino (IFIC/CSIC, University of Valencia); Mr HARRIES, Dylan (University of Adelaide); STAUB, Florian (CERN); Mr NICKEL, Kilian (Bonn University); BASSO, Lorenzo (Institut Pluridisciplinaire Hubert Curien (FR)); UBALDI, Lorenzo (Tel Aviv University); Dr KRAUSS, Manuel E. (Bonn University); GOODSSELL, Mark Dayvon (Ecole Polytechnique (FR)); ATHRON, Peter; OPFERKUCH, Toby (Universität Bonn)

Presenter: OPFERKUCH, Toby (Universität Bonn)

Session Classification: SUSY

Track Classification: Searches for Supersymmetry

Contribution ID: 239

Type: **Talk**

LHCb upgrade plans and potential

The LHCb experiment, operating at the CERN Large Hadron Collider, has been designed to perform high-precision measurements of CP violation and searches for New Physics using the huge flux of beauty and charmed hadrons produced in proton-proton collisions at 13TeV collision energy. The LHCb detector is a single-arm forward spectrometer and shows excellent tracking system and particle identification capabilities. The detector has operated very smoothly and with impressive performances during Run1 and is currently taking data during Run2. LHCb has, and continues to, perform very interesting measurements in the heavy flavor sector. However, the limit of a few fb⁻¹ of data per year cannot be overcome without increasing the readout limitation of the detector, which today cannot exceed 1MHz. The upgraded spectrometer, featuring a 40MHz readout and a much more flexible fully software-based trigger system, will allow increasing the data rate as well as the efficiency in particular for hadronic channels, allowing a widening of our physics scope. In this talk I will present the status of the upgrade work for the various subsystems, including trigger and DAQ, and I will discuss the discovery potential of LHCb for Run3 and beyond.

Author: CARDINI, Alessandro (INFN Cagliari, Italy)

Presenter: CARDINI, Alessandro (INFN Cagliari, Italy)

Session Classification: Plenary upgrade

Track Classification: Upgrade plans and future colliders

Contribution ID: 240

Type: **Poster**

Vector meson production in photon induced interactions at LHC

The exclusive vector meson production in photon - induced interactions at LHC is investigated using the color dipole formalism and considering different models for the vector wave functions and forward dipole - target scattering amplitude. Our goal is to update the color dipole predictions and estimate the theoretical uncertainty present in these predictions. We present predictions for the kinematical ranges probed by the ALICE, CMS and LHCb Collaborations in the Run2 of the LHC.

Author: Prof. GONCALVES, Victor (Lund University)

Presenter: Prof. GONCALVES, Victor (Lund University)

Session Classification: Poster Session

Track Classification: QCD physics at hadron colliders

Contribution ID: 241

Type: **Talk**

Impact of LHC measurements on Parton Density Functions

LHC production measurements with jets, isolated photons as well as W and Z/γ^* bosons are discussed and their impact on the knowledge of the parton density functions is highlighted. The talk will cover the latest results of ATLAS, CMS and LHCb.

Author: MUELLER, Katharina (Universitaet Zuerich (CH))

Presenter: MUELLER, Katharina (Universitaet Zuerich (CH))

Session Classification: QCD

Track Classification: QCD physics at hadron colliders

Contribution ID: 244

Type: **Talk**

First LHCb results from pA and PbPb collisions

The LHCb experiment has the unique property to study heavy ion interactions in the forward and backward hemisphere in a kinematic region not accessible to the general purpose detectors, thanks to its forward acceptance $2 < \eta < 5$, and the possibility to study proton-lead collisions for both orientations of the beams. Furthermore, using the possibility to inject gas into the interaction region, it is in the unique position to do also fixed target physics.

Results include measurement of prompt D^0 meson production in pPb collisions at LHCb, the first forward measurement of Z production in pPb collisions as well as a measurement of the nuclear modification factor and forward-backward production of prompt and displaced J/ψ , $\Psi(2S)$ and Υ . Recent results and news from the Pb-Pb, Pb-Ar, proton-He, proton-Ne and proton-Ar runs will be also presented, as well as future prospects.

Author: MASSACRIER, Laure Marie (Laboratoire de l'Accelérateur Lineaire (FR))

Presenter: MASSACRIER, Laure Marie (Laboratoire de l'Accelérateur Lineaire (FR))

Session Classification: Heavy Ion

Track Classification: Physics of Heavy Ion collisions

Contribution ID: 245

Type: **Talk**

New results in beauty and charm spectroscopy with LHCb

The LHCb experiment is designed to study the decays and properties of heavy flavoured hadrons produced in the forward region from pp collisions at the CERN Large Hadron Collider. During Run1, it has recorded the world's largest data sample of beauty and charm hadrons, enabling precise studies into the spectroscopy of such particles, including discoveries of new states and measurements of their properties such as masses, width and quantum numbers. Moreover the discovery of the first pentaquark states and the first determination of the $Z_c(4430)$ as a tetra quark state have increased the interest for exotic spectroscopy. An overview of the recent LHCb results in this area is presented.

Author: CARDINALE, Roberta (Universita e INFN Genova (IT))

Presenter: CARDINALE, Roberta (Universita e INFN Genova (IT))

Session Classification: Heavy Flavour

Track Classification: Heavy Flavour physics

Contribution ID: 246

Type: **Talk**

CPV in charm decays with LHCb

LHCb has collected the world's largest sample of charmed hadrons during the run 1. This allowed several most precise measurements to be shown in this talk. Among those, a measurement of ΔA_{CP} , the relative strength of direct, time-integrated CP asymmetries between two singly-Cabibbo suppressed two-body D^0 decays, which was recently updated using D^0 promptly produced at the primary vertex of the proton-proton collision. In addition, several other CP violation searches will be discussed.

Author: DERKACH, Denis (Yandex School of Data Analysis (RU))

Presenter: DERKACH, Denis (Yandex School of Data Analysis (RU))

Session Classification: Heavy Flavour

Track Classification: Heavy Flavour physics

Contribution ID: 247

Type: **Talk**

Searches for exotic new physics with LHCb

Following the competitive performance of the LHCb detector, searches for exotic physics will be introduced. Summary of exotics at LHCb including observation of pentaquark candidates will be presented, however, emphasis will be put on searches with experimental signatures of long-lived particles and particles decaying into jet pairs.

Author: RACHWAL, Bartlomiej (Polish Academy of Sciences (PL))

Presenter: RACHWAL, Bartlomiej (Polish Academy of Sciences (PL))

Session Classification: Exotics & Dark Matter

Track Classification: New Exotic phenomena and Dark Matter searches

Contribution ID: 248

Type: **Poster**

First results on Vector Bilepton production based on LHC data and predictions for Run II

In this work one investigates the LHC potential for discovering doubly-charged vector bileptons considering the measurable process $p,p \rightarrow \mu^+, \mu^+, \mu^-, \mu^-, X$. We perform the study assuming different bilepton masses and different exotics quark masses. The process cross-section is calculated at leading-order using the CALCHEP package. Combining this calculation with the latest ATLAS results at 8 TeV, we derive, for the first time, bounds on bilepton mass using LHC data. The results exclude bileptons with masses in the range 200 GeV to 500 GeV, depending on the exotics quarks masses. A detector simulation is also performed using the DELPHES package assuming a LHC center-of-mass energy of 13 TeV. The results of the simulation are used to obtain minimal integrated luminosities needed for discovering and for setting limits on bilepton masses at 13 TeV.

Author: Prof. ANDRE NEPOMUCENO, Andre (Universidade Federal Fluminense)

Co-author: MEIROSE, Bernhard (University of Texas at Dallas (US))

Presenter: Prof. ANDRE NEPOMUCENO, Andre (Universidade Federal Fluminense)

Session Classification: Poster Session

Track Classification: New Exotic phenomena and Dark Matter searches

Contribution ID: 249

Type: Poster

Where are we heading (to see the invisible or finding the way in a chaotic context)?

Discover modern physics through art - discover art through modern physics
Illustrating some physics milestones from 1915 (Karl Schwarzschild) to 2012 (the discovery of the Higgs particle).

Paper submitted 13-04-2016 by Linda Jarlskog and Stefan Agnani, Dalby, Sweden*, and Ulf Söderstrand, Anderslöv, Sweden

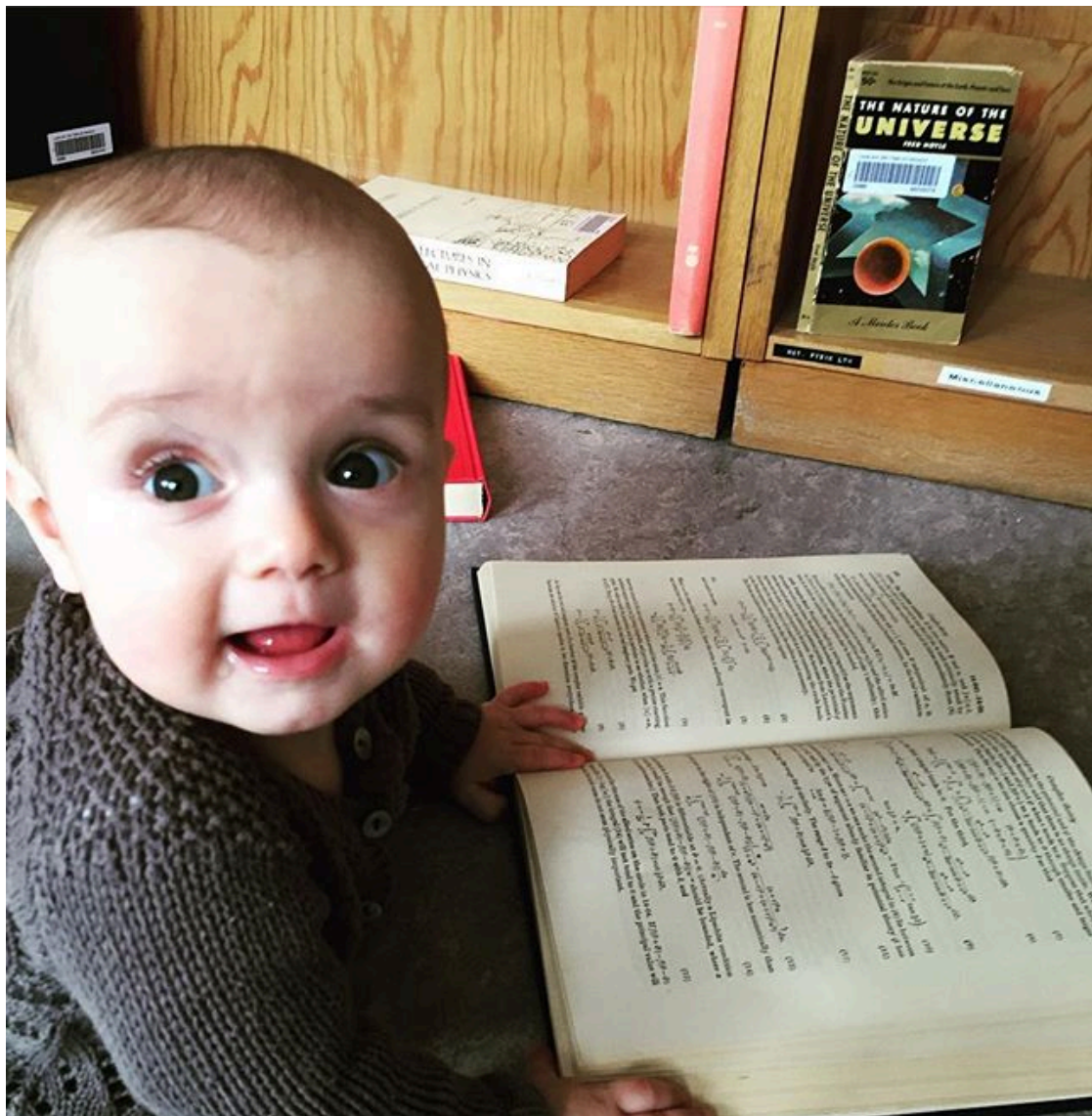


Figure 1: enter image description here

*<http://www.artandscience.se/>

Author: Mrs JARLSKOG, Linda (Komvux, Lund, Sweden)

Presenter: Mrs JARLSKOG, Linda (Komvux, Lund, Sweden)

Session Classification: Poster Session

Track Classification: Outreach

Contribution ID: 252

Type: **Poster**

Search for dark matter with jets and missing transverse energy at 13 TeV

A search for new physics is performed using events having large missing transverse momentum and one or more jets with high transverse momenta in a data sample of proton-proton interactions at the centre-of-mass energy of 13 TeV. The data correspond to an integrated luminosity of 2.3 fb^{-1} collected in 2015 by the CMS detector, during the Run2 of the LHC. Results are presented in terms of limits on dark matter production based on simplified models

Author: VANNEROM, David (Universite Libre de Bruxelles (BE))

Presenter: VANNEROM, David (Universite Libre de Bruxelles (BE))

Session Classification: Poster Session

Track Classification: New Exotic phenomena and Dark Matter searches

Contribution ID: 253

Type: **Poster**

Phase1 upgrade of the CMS-HF Calorimeter

In this poster, results of the Phase1 upgrade of the CMS Hadron Calorimeter (HF) will be discussed. The CMS-HF Calorimeter was using regular PMTs. Cherenkov light produced in the fibers embedded in the absorber was read out with the PMTs. However, occasionally stray muons hitting the PMT windows cause Cherenkov radiation in the PMT itself and produce large signals. These large signals mimic a very high-energy particle and are tagged as important by the trigger. To reduce this problem, it was decided to replace the PMTs. The four-anode PMTs that were chosen have thinner windows; thereby reducing the Cherenkov radiation in the PMT window. As part of the upgrade, the read-out electronics is to be replaced so that the PMTs are read out in two channels by connecting each pair of anodes to a single channel. Information provided by these two channels will help us reject the false signals due to the stray muons since the Cherenkov radiation in the PMT window is more likely to produce a signal only in one anode as opposed to a real signal whose light illuminates all four anodes. In this poster, the effect of the thinner windows on reducing the unwanted signals will be shown. Currently, the four-anode PMTs are read out using the old electronic system with all four anodes ganged together. Testing and possible installation of the new read-out system will be mentioned in detail. Some algorithms to be used for rejecting the false signals will also be discussed.

Author: Prof. GULMEZ, Erhan (Bogazici University (TR))

Presenter: Prof. GULMEZ, Erhan (Bogazici University (TR))

Session Classification: Poster Session

Track Classification: Upgrade plans and future colliders

Contribution ID: 254

Type: **Poster**

Search for the standard model Higgs boson produced in vector boson fusion and decaying to bottom quarks using the Run1 and 2015 Run2 data samples.

A search for the standard model Higgs boson is presented in the Vector Boson Fusion production channel with decay to bottom quarks. A data sample comprising 2.2 fb^{-1} of proton-proton collision at $\sqrt{s} = 13 \text{ TeV}$ collected during the 2015 running period has been analyzed. Production upper limits at 95% Confidence Level are derived for a Higgs boson mass of 125 GeV, as well as the fitted signal strength relative to the expectation for the standard model Higgs boson. Results are also combined with the ones obtained with Run1 $\sqrt{s} = 8 \text{ TeV}$ data collected in 2012.

Author: CHERNYAVSKAYA, Nadezda (Eidgenoessische Tech. Hochschule Zuerich (CH))

Co-author: AZZURRI, Paolo (Universita di Pisa & INFN (IT))

Presenter: CHERNYAVSKAYA, Nadezda (Eidgenoessische Tech. Hochschule Zuerich (CH))

Session Classification: Poster Session

Track Classification: Higgs physics in the Standard Model and beyond

Contribution ID: 255

Type: **Poster**

Measurement of the transverse momentum spectrum of the Higgs boson decaying into WW at 8 TeV with the CMS detector

Differential and integrated fiducial cross sections measured using the $H \rightarrow W^+W^-$ leptonic decays, are presented as a function of the Higgs boson production. The measurements are performed using pp collisions at a centre-of-mass energy of 8 TeV collected by the CMS experiment at the LHC, corresponding to an integrated luminosity of 19.4 fb^{-1} . The Higgs boson transverse momentum is reconstructed using the lepton pair transverse momentum and missing transverse momentum, which originates from the presence of two neutrinos in the final state. The differential cross section is measured as a function of the Higgs boson transverse momentum in a fiducial phase space defined to match the experimental acceptance in terms of the lepton kinematics and event topology. The measurements are finally compared to theoretical calculations.

Author: VILLANI, Lorenzo (Universita e INFN, Firenze (IT))

Presenter: VILLANI, Lorenzo (Universita e INFN, Firenze (IT))

Session Classification: Poster Session

Track Classification: Higgs physics in the Standard Model and beyond

Contribution ID: 256

Type: **Talk**

QCD Results from LHCb

The LHCb experiment, besides its main programme of b and c-physics also performs very well as a general purpose forward detector, covering the pseudo-rapidity range 2.0 to 5.0. Exploiting the experiment's unique geometry, the LHCb collaboration is pursuing a rich programme of forward QCD measurements that includes jet production measurements, soft inclusive particle distributions and correlations, and central exclusive production. A selection of these results will be presented highlighting the capabilities of LHCb as a general purpose experiment.

Author: PASSALEVA, Giovanni (INFN Florence (IT))

Presenter: PASSALEVA, Giovanni (INFN Florence (IT))

Session Classification: QCD

Track Classification: QCD physics at hadron colliders

Contribution ID: 257

Type: **Poster**

Search for a high-mass neutral Higgs boson using the CMS Detector

Presented are the results of the CMS search for a neutral Higgs boson in the mass range above 200 GeV in pp collisions at 8 TeV and 13 TeV center of mass energy

Author: Mr MEI, Hualin (University of Florida)

Presenter: Mr MEI, Hualin (University of Florida)

Session Classification: Poster Session

Track Classification: Higgs physics in the Standard Model and beyond

Contribution ID: 258

Type: **Poster**

Mass Reconstruction for High Multiplicity Final States Using the Boundary of Phase Space

The lack of conclusive evidence for new physics in Run I of the LHC suggests that future discoveries may manifest themselves with small numbers of signal events. In this case, it will be crucial to use analysis techniques that extract as much information as possible from a limited number of events. Previously, a technique exploiting correlations in the full multi-particle phase space to efficiently reconstruct intermediate and invisible masses in decay chains has been demonstrated for the case of four final state particles. I will discuss the extension of this technique to decay chains with five or more final state particles and the structure of likelihood functions for arbitrary decay topologies.

Author: KLIMEK, Matthew (University of Texas)

Co-authors: ALTUNKAYNAK, Baris (University of Oklahoma); KILIC, Can (University of Texas at Austin)

Presenter: KLIMEK, Matthew (University of Texas)

Session Classification: Poster Session

Track Classification: New Exotic phenomena and Dark Matter searches

Contribution ID: 259

Type: **Talk**

CPV in beauty decays with LHCb

During 2011 and 2012, pp collision data corresponding to integrated luminosities of 1 fb^{-1} at a centre-of-mass energy of 7 TeV and 2 fb^{-1} at 8 TeV have been collected with the LHCb detector. The consequent world's largest sample of beauty hadrons has enabled the LHCb collaboration to perform various measurements of CP violation in beauty decays. The latest LHCb results will be presented.

Author: MEIER, Frank (Technische Universitaet Dortmund (DE))

Presenter: MEIER, Frank (Technische Universitaet Dortmund (DE))

Session Classification: Heavy Flavour

Track Classification: Heavy Flavour physics

Contribution ID: 260

Type: **Poster**

Performance of Missing Energy reconstruction at the CMS detector with early 13 TeV data

The Missing Transverse Energy is a key observable in many CMS searches for Physics Beyond Standard Model. A detailed and precise understanding of this quantity is required to accomplish the CMS Physics program, while the high collision rate at the CMS detector during the 13 TeV data-taking periods of the LHC poses challenges to reconstruction far beyond those previously overcome.

This poster shows the performance studies carried out on advanced MET reconstruction algorithms using the data collected at 13 TeV in 2015.

Author: VESTERBACKA, Minna Leonora (Eidgenoessische Tech. Hochschule Zuerich (CH))

Presenter: VESTERBACKA, Minna Leonora (Eidgenoessische Tech. Hochschule Zuerich (CH))

Session Classification: Poster Session

Track Classification: LHC experiments: performance and potential

Contribution ID: 261

Type: **Poster**

The High Level Trigger of the CMS experiment

The CMS experiment has been designed with a 2-level trigger system: the Level 1 Trigger, implemented on custom-designed electronics, and the High Level Trigger, a streamlined version of the CMS offline reconstruction software running on a computer farm. In this poster we will present the performance with the specific algorithms developed to cope with the increasing LHC pile-up and bunch crossing rate using 13 TeV data during 2015, and prospects for improvements brought to both L1T and HLT strategies to meet the new challenges for 2016 scenarios with a peak instantaneous luminosity of $1.2 \times 10^{34} \text{ cm}^{-2}\text{s}^{-1}$ and 30 pileup events.

Author: GAO, Xuyang (Beihang University (CN))

Presenter: GAO, Xuyang (Beihang University (CN))

Session Classification: Poster Session

Track Classification: LHC experiments: performance and potential

Contribution ID: 262

Type: **Poster**

Search for heavy resonances in the dilepton final state with the CMS detector

A search for a new narrow resonance decaying to an electron pair or a muon pair is performed using 13 TeV pp collision data collected by the CMS experiment at the CERN LHC. The electron event sample used corresponds to an integrated luminosity of 2.6 fb^{-1} while the muon event sample used corresponds to an integrated luminosity of 2.8 fb^{-1} . The results are interpreted in terms of the possible presence of a new massive narrow spin 1 boson decaying into electron or muon pairs, for different new physics scenarios beyond the Standard Model.

Author: FANG, Wenxing (Beihang University (CN))

Presenter: FANG, Wenxing (Beihang University (CN))

Session Classification: Poster Session

Track Classification: New Exotic phenomena and Dark Matter searches

Contribution ID: 263

Type: **Talk**

SModelS: A tool for interpreting simplified-model results from the LHC

A software toolkit “SModelS” is presented that systematically confronts theories Beyond the Standard Model (BSM) against experimental LHC data. The toolkit consists of a procedure to decompose a given full BSM model in terms of a Simplified Model Spectrum (SMS). In addition, SModelS ships with a database of SMS results produced by the CMS and ATLAS collaborations. The results are given for specific topologies either as upper limits on production cross sections or as signal efficiency maps. While the current SModelS version 1.0 can only handle the former, SModelS 1.1 will also be able to cope with the latter. Using recasting tools such as MadAnalysis5 or CheckMATE, it is possible to enrich the database with efficiency maps created by groups outside the experimental collaborations, including ourselves. The database together with the decomposition code allow us to quickly confront an arbitrary BSM theory with the SMS results.

We discuss the application of the framework to two different supersymmetric scenarios, and demonstrate how feedback to the experimental communities about missed SMS topologies can be given.

While SModelS currently requires the probed model to respect a discrete Z_{2} symmetry, it is our aim to also extend the framework to non-MET signatures, including signatures with heavy stable charged particles.

It is our long term vision to build up a Next Standard Model from experimental SMS null and positive results in a bottom-up fashion.

The toolkit is open source, written in python, and available under <http://smodels.hephy.at>.

Authors: LESSA, Andre (IFGW - UNICAMP); AMBROGI, Federico (Austrian Academy of Sciences (AT)); TRAUB, Michael (Austrian Academy of Sciences (AT)); KRAML, Sabine (Centre National de la Recherche Scientifique (FR)); KULKARNI, Suchita (Austrian Academy of Sciences (AT)); LAA, Ursula (LPSC Grenoble); MAGERL, Veronika (Albert-Ludwigs-Universitaet Freiburg (DE)); WALTENBERGER, Wolfgang (Austrian Academy of Sciences (AT))

Presenter: WALTENBERGER, Wolfgang (Austrian Academy of Sciences (AT))

Session Classification: SUSY

Track Classification: Searches for Supersymmetry

Contribution ID: 264

Type: **Poster**

Search for new physics with high-mass tau-lepton pairs in pp collisions at 13 TeV with the CMS detector

A search for new physics in the high mass ditau final state is performed using pp collisions at 13 TeV. The data used was collected by the CMS experiment during 2015 with an integrated luminosity of 2.3 fb⁻¹. Results are interpreted considering a number of theoretical models such as Z', large extra dimension scenario, R-parity violating theories.

Author: GONZALEZ HERNANDEZ, Carlos Felipe (Universidad de los Andes (CO))

Presenter: GONZALEZ HERNANDEZ, Carlos Felipe (Universidad de los Andes (CO))

Session Classification: Poster Session

Track Classification: New Exotic phenomena and Dark Matter searches

Contribution ID: 266

Type: **Poster**

ON POSSIBLE ANOMALOUS MAGNETIC MOMENT OF THE HIGGS BOSON AT A MASS AROUND 125 GeV

We investigate the questions connected with the possible anomalous magnetic moment of the Higgs boson at a mass around 125 GeV discovered at the LHC ATLAS and CMS experiments. We have derived a simple analytical formula for the anomalous magnetic moment of the Higgs boson in a sufficiently strong magnetic field. We have performed numerical estimations on the anomalous magnetic moment of the Higgs boson. The calculations show that with the increasing of the magnetic field strength the anomalous magnetic moment of the Higgs boson may change its sign from “negative” to “positive”.

Author: Prof. HUSEYNOV, Vali (Baku State University, Qafqaz University, Nakhchivan State University)

Co-author: Dr GASIMOVA, Rasmiyya (Shamakhy Astrophysical Observatory, Qafqaz University, Baku State University)

Presenter: Prof. HUSEYNOV, Vali (Baku State University, Qafqaz University, Nakhchivan State University)

Session Classification: Poster Session

Track Classification: Higgs physics in the Standard Model and beyond

Contribution ID: 268

Type: **Poster**

The CMS Calorimeter Trigger for the LHC Run II

The Compact Muon Solenoid (CMS) experiment has implemented a sophisticated two-level online selection system that achieves a rejection factor of nearly 10^5 . During Run II, the LHC will increase its centre-of-mass energy up to 13 TeV and progressively reach an instantaneous luminosity of $2 \times 10^{34} \text{cm}^{-2}\text{s}^{-1}$. In order to guarantee a successful and ambitious physics programme under this intense environment, the CMS Trigger and Data acquisition (DAQ) system has been upgraded. A novel concept for the L1 calorimeter trigger is introduced: the Time Multiplexed Trigger (TMT). In this design, which is similar to the CMS DAQ or HLT architecture, nine main receive each all of the calorimeter data from an entire event provided by 18 preprocessors. The advantage of the TMT architecture is that a global view and full granularity of the calorimeters can be exploited by sophisticated algorithms. The goal is to maintain the current thresholds for calorimeter objects and improve the performance for their selection. The introduction of new triggers based on the combination of calorimeter objects is also foreseen. The performance of these algorithms will be presented, both in terms of efficiency and rate reduction using the proton collision data collected in 2016. The challenging aspect of the pile-up mitigation will be addressed. The impact of the improved selection criteria on benchmark physics channels such as Higgs and Supersymmetry will be presented as well in this talk.

Author: AGGLETON, Robin Cameron (University of Bristol (GB))

Presenter: AGGLETON, Robin Cameron (University of Bristol (GB))

Session Classification: Poster Session

Track Classification: LHC experiments: performance and potential

Contribution ID: 269

Type: **Poster**

Rate capabilities and longevity of CMS Cathode Strip Chambers

The forward muon system of the CMS experiment is comprised of about 500 Cathode Strip Chambers (CSCs) with the total sensitive area of 6000 square meters. In view of the operating conditions at High Luminosity LHC (HL-LHC), it is vital to assess the CSC system performance in terms of their ability to operate in the expected HL-LHC instantaneous rates and in terms of their longevity over the HL-LHC lifespan. We present the first results obtained with two full-scale chambers at the new CERN GIF++ (Gamma Irradiation Facility), which allows us to address these two questions. In addition, we report the results of the gas gain monitoring in the entire CMS CSC system over the duration of the LHC Run 1 period.

Author: WANG, Jian (University of Florida (US))

Presenter: WANG, Jian (University of Florida (US))

Session Classification: Poster Session

Track Classification: LHC experiments: performance and potential

Contribution ID: 271

Type: **Poster**

Heavy Flavor Production at 13TeV

We present measurements of the differential production cross section of B hadron in pp collisions at a center-of-mass energy of 13 TeV. The data sample used in this study was collected by the CMS experiment in 2015, with a bunch spacing of 25ns, it corresponds to an integrated luminosity of 2.71 fb⁻¹. These measurements are important tools to investigate heavy-quark production mechanisms in QCD.

Author: Mr GALINHAS, Bruno (LIP)

Presenter: Mr GALINHAS, Bruno (LIP)

Session Classification: Poster Session

Track Classification: Heavy Flavour physics

Contribution ID: 272

Type: **Poster**

Search for ttH production in the $H \rightarrow$ Multilepton decay channels with $\sqrt{s} = 13$ TeV pp collisions at the CMS experiment

A search for the standard model Higgs boson produced in association with a top quark pair is presented, using 2.3 /fb of 13 TeV pp collision data collected by the CMS experiment at the CERN LHC. Final states with a Higgs boson that decays to either ZZ, WW , or $\tau\tau$ are required to have a top quark pair that decays to either lepton plus jets ($tt \rightarrow lvjjbb$) or dileptons ($tt \rightarrow lvlvbb$), where l represents an electron or a muon. The following signatures are selected: two isolated same-sign leptons (electrons or muons) plus b-tagged jets, three isolated leptons plus b-tagged jets, or four isolated leptons plus b-tagged jets. The presence of an hadronic τ reconstructed in the event is also considered in the event categorization. The expected 95% confidence level upper limit on the Higgs boson production cross section for a Higgs boson mass of 125 GeV is 2.6 times the standard model expectation, compared to an observed limit of 3.5. The signal strength μ , relative to the expectation for the standard model Higgs boson, is measured to be $0.8^{(+1.4)}_{(-1.2)}$.

Author: LI, Binghuan (Chinese Academy of Sciences (CN))

Presenter: LI, Binghuan (Chinese Academy of Sciences (CN))

Session Classification: Poster Session

Track Classification: Higgs physics in the Standard Model and beyond

Contribution ID: 273

Type: **Talk**

Vector boson (plus jets) physics in pp collisions at the LHC (review)

Studies of W and Z boson production in association with jets are presented. Total cross-sections are measured and combined into charge ratios, asymmetries, and ratios of W+jet and Z+jet production cross-sections. Differential measurements are also performed as a function of both boson and jet kinematic variables.

Author: SANTANA RANGEL, Murilo (Univ. Federal do Rio de Janeiro (BR))

Presenter: SANTANA RANGEL, Murilo (Univ. Federal do Rio de Janeiro (BR))

Session Classification: QCD Plenary

Track Classification: QCD physics at hadron colliders

Contribution ID: 274

Type: **Poster**

Search for $t\bar{t}$ Resonances at CMS

We present a search for new massive particles decaying to a pair of top quarks with the CMS detector at the LHC. Proton-proton collision data recorded at a centre-of-mass energy of 13 TeV are used. The search is performed by measuring the invariant mass distribution of the top-quark pair and testing for deviations from the expected Standard Model background. Final states with 0 or 1 leptons are considered and the selection optimized accordingly. In the high mass ranges accessible by the LHC at these energies, the top quarks are produced with high transverse momentum: the products of hadronically decaying top quarks emerge as a single jet, whereas the products of the semileptonic decay mode are characterized by the overlap of the lepton and the b jet. Specific reconstruction algorithm and selections are employed to address the identification of boosted top quark signatures. The results are presented in terms of upper limits on the model cross section. Models of Randall-Sundrum Kaluza-Klein gluon production as well as narrow, wide, and extra wide Z' boson models are considered.

Author: MC LEAN, Christine Angela (University of California Davis (US))

Presenter: MC LEAN, Christine Angela (University of California Davis (US))

Session Classification: Poster Session

Track Classification: New Exotic phenomena and Dark Matter searches

Contribution ID: 275

Type: **Talk**

Vector Boson studies in LHCb (including AFB results from all experiments)

Measurements are presented of electroweak boson production in the forward region using data from pp collisions. The evolution of the W and Z boson cross-sections with centre-of-mass energy and differential distributions are also studied. Measurements of the forward backward charge asymmetry of Z at LHC experiments are presented. These results provide precision tests on the electroweak theory, high order predictions and the information can be used to constraint parton distribution functions.

Author: SANTANA RANGEL, Murilo (Univ. Federal do Rio de Janeiro (BR))

Presenter: SANTANA RANGEL, Murilo (Univ. Federal do Rio de Janeiro (BR))

Session Classification: Electroweak

Track Classification: Electroweak physics at hadron colliders

Contribution ID: 276

Type: **Poster**

SUSY searches in events with two opposite-sign same-flavor leptons, jets and MET with the CMS detector

A search is presented for physics beyond the standard model in final states with two opposite-sign same-flavor leptons, jets, and missing transverse momentum. The data sample corresponds to an integrated luminosity of 2.2 inverse fb of proton-proton collisions at $\sqrt{s}=13$ TeV collected with the CMS detector at the CERN LHC in 2015. The analysis focuses on the invariant mass distribution of the lepton pair, searching for a kinematic edge or a resonant-like excess compatible with the Z boson mass. The kinematic edge search includes phase-space regions matching the previous 8 TeV analysis where CMS reported a 2.6 sigma excess. The resonant Z boson peak search includes a region where ATLAS reported a 3.0 sigma excess at 8 TeV. Additional event categories are included in both searches beyond those in the 8 TeV analysis to increase sensitivity to new physics. The observations in all signal regions are consistent with the expectations from the standard model, and the results are interpreted in the context of simplified models of supersymmetry.

Author: SCHULTE, Jan-Frederik (Rheinisch-Westfaelische Tech. Hoch. (DE))

Presenter: SCHULTE, Jan-Frederik (Rheinisch-Westfaelische Tech. Hoch. (DE))

Session Classification: Poster Session

Track Classification: Searches for Supersymmetry

Contribution ID: 277

Type: **Poster**

Search for electroweak production of charginos in final states with two tau leptons in pp collisions at $\sqrt{s} = 8 \text{ TeV}$

A search for electroweak production of supersymmetric particles is performed with two tau leptons in the final state. These results are based on 18.1 to 19.6 fb⁻¹ of proton- proton collisions at $\sqrt{s} = 8 \text{ TeV}$, collected with the CMS detector at the CERN Large Hadron Collider. The observed events are found to be consistent with the standard model prediction. Upper limits are set on the masses of the lightest chargino and the lightest neutralino, assuming the third generation sleptons are the lightest sleptons and their masses are at a middle point between the chargino and the neutralino. In the context of simplified model spectra, charginos lighter than 417 GeV are excluded at 95% confidence level in the case of massless neutralino.

Author: PAKTINAT MEHDIABADI, Saeid (School of Particles and Accelerator Inst. for Res. in Fundam. S)

Co-authors: JAFARI, Abideh (Universite Catholique de Louvain (UCL) (BE)); FAHIM, Ali (School of Particles and Accelerator Inst. for Res. in Fundam. S); ESKANDARI, Esmaeel (School of Particles and Accelerator Inst. for Res. in Fundam. S); BAKHSHIANSOHI, Hamed (CP3, UCL); ZEINALI, Maryam (School of Particles and Accelerator Inst. for Res. in Fundam. S); CHENARANI, Shirin (School of Particles and Accelerator Inst. for Res. in Fundam. S)

Presenter: ESKANDARI, Esmaeel (School of Particles and Accelerator Inst. for Res. in Fundam. S)

Session Classification: Poster Session

Track Classification: Searches for Supersymmetry

Contribution ID: 279

Type: **Talk**

New results in LU/LFV tests with LHCb

During Run 1 of the LHC, the LHCb experiment has collected a large sample of beauty-hadrons that corresponds to an integrated luminosity of 3.0 fb^{-1} at pp centre-of-mass energy of 7 and 8 TeV. This talk gives an overview of the rare decay measurements the LHCb collaboration performed during Run 1. In particular, recent tests of lepton flavour universality, with deviations also observed in semileptonic decays, and searches for lepton flavour violation decays will be presented.

Author: PRISCIANDARO, Jessica (Universidade de Santiago de Compostela (ES))

Presenter: PRISCIANDARO, Jessica (Universidade de Santiago de Compostela (ES))

Session Classification: Heavy Flavour

Track Classification: Heavy Flavour physics

Contribution ID: **280**Type: **Talk**

Status and recent highlights from LHCb

The LHCb experiment has collected large samples of heavy flavoured hadrons during Run 1, corresponding to an integrated luminosity of 3.0/fb at pp centre-of-mass energies of 7 and 8 TeV. Data-taking at a CM energy of 13 TeV has now begun. The current status of LHCb after the 2016 restart will be presented. Key results from LHCb will be summarised, with emphasis on the most recent.

Author: CHARLES, Matthew John (Centre National de la Recherche Scientifique (FR))

Presenter: CHARLES, Matthew John (Centre National de la Recherche Scientifique (FR))

Session Classification: Opening Plenary

Track Classification: LHC experiments: performance and potential

Contribution ID: 281

Type: **Talk**

Heavy flavour production and spectroscopy at the LHC

With large data samples collected by LHC experiments at several energies, Quantum Chromodynamics can be tested in detail with heavy flavour production. Moreover huge samples of data allow to challenge our understanding of hadrons in detailed studies of systems not being available before. In this talk we will review recent results on heavy quark hadron production at LHC. Besides production we will also discuss recent spectroscopy results with check for the existence of tetraquark state decaying to $B_s\pi^+$ claimed by the D0 collaboration or model independent confirmation of pentaquark states.

Author: KREPS, Michal (University of Warwick (GB))

Presenter: KREPS, Michal (University of Warwick (GB))

Session Classification: Heavy Flavour Plenary

Track Classification: Heavy Flavour physics

Contribution ID: 282

Type: **Poster**

Flavour tagging algorithms and performance at the ATLAS experiment

Author: CALANDRI, Alessandro (CPPM, Aix-Marseille Université, CNRS/IN2P3 (FR))

Presenter: CALANDRI, Alessandro (CPPM, Aix-Marseille Université, CNRS/IN2P3 (FR))

Session Classification: Poster Session

Track Classification: Heavy Flavour physics

Contribution ID: 283

Type: **Poster**

ATLAS b-tagging efficiency measurements using top-pair events

Author: BELL, Andrew Stuart (University of London (GB))

Presenter: BELL, Andrew Stuart (University of London (GB))

Session Classification: Poster Session

Track Classification: Heavy Flavour physics

Contribution ID: 284

Type: **Poster**

Measurement of ttZ and ttW production at ATLAS in 13 TeV data, using trilepton and same charge dimuon final states

Author: BESSIDSKAIA BYLUND, Olga (Stockholm University (SE))

Presenter: BESSIDSKAIA BYLUND, Olga (Stockholm University (SE))

Session Classification: Poster Session

Track Classification: Top Quark physics

Contribution ID: 285

Type: **Poster**

Measurement of the ttZ cross section in the four lepton channel at 13 TeV with ATLAS

Author: SCHULTE, Alexandra (Johannes-Gutenberg-Universitaet Mainz (DE))

Presenter: SCHULTE, Alexandra (Johannes-Gutenberg-Universitaet Mainz (DE))

Session Classification: Poster Session

Track Classification: Top Quark physics

Contribution ID: 286

Type: **Poster**

Measurements of Zgamma and Zgammagamma production in pp collisions at $\sqrt{s}=8\text{TeV}$ with the ATLAS detector

Author: KRASNOPEVTSEV, Dimitrii (National Research Nuclear University MEPhI (RU))

Presenter: KRASNOPEVTSEV, Dimitrii (National Research Nuclear University MEPhI (RU))

Session Classification: Poster Session

Track Classification: QCD physics at hadron colliders

Contribution ID: 287

Type: **Poster**

Search for Neutral Minimal Supersymmetric Standard Model Higgs Bosons $H/A \rightarrow \tau\tau$ produced in pp collisions at $\sqrt{s} = 13$ TeV with the ATLAS Detector

Author: ALVAREZ PIQUERAS, Damian (Instituto de Fisica Corpuscular (ES))

Presenter: ALVAREZ PIQUERAS, Damian (Instituto de Fisica Corpuscular (ES))

Session Classification: Poster Session

Track Classification: Higgs physics in the Standard Model and beyond

Contribution ID: 288

Type: **Poster**

Study of di-lepton final state with missing transverse momentum with ATLAS detector

Author: BASALAEV, Artem (B.P. Konstantinov Petersburg Nuclear Physics Institute - PNPI ())

Presenter: BASALAEV, Artem (B.P. Konstantinov Petersburg Nuclear Physics Institute - PNPI ())

Session Classification: Poster Session

Track Classification: Higgs physics in the Standard Model and beyond

Contribution ID: 289

Type: **Poster**

Search for the Standard Model Higgs boson decaying into $b\bar{b}$ produced in association with top quarks decaying hadronically in pp collisions at $\sqrt{s}=8$ TeV with the ATLAS detector

Author: BRUSCINO, Nello (Universitaet Bonn (DE))

Presenter: BRUSCINO, Nello (Universitaet Bonn (DE))

Session Classification: Poster Session

Track Classification: Higgs physics in the Standard Model and beyond

Contribution ID: 290

Type: **Poster**

A search for supersymmetry in events containing a leptonically decaying Z boson, jets and missing transverse momentum in $\sqrt{s} = 13$ TeV pp collisions with the ATLAS detector

Author: RIPELLINO, Giulia (KTH Royal Institute of Technology (SE))

Presenter: RIPELLINO, Giulia (KTH Royal Institute of Technology (SE))

Session Classification: Poster Session

Track Classification: Searches for Supersymmetry

Contribution ID: 291

Type: **Poster**

Search for metastable heavy charged particles with large ionization energy loss in pp collisions at $\sqrt{s}=13$ TeV with the ATLAS detector

Author: FAVARETO, Andrea (Università degli Studi e INFN Genova)

Presenter: FAVARETO, Andrea (Università degli Studi e INFN Genova)

Session Classification: Poster Session

Track Classification: Searches for Supersymmetry

Contribution ID: 292

Type: **Poster**

Search for top squarks in final states with one isolated lepton, jets, and missing transverse momentum in $\sqrt{s}=13$ TeV pp collisions using 3.2 fb⁻¹ of ATLAS data

Author: KUECHLER, Jan (Bergische Universitaet Wuppertal (DE))

Presenter: KUECHLER, Jan (Bergische Universitaet Wuppertal (DE))

Session Classification: Poster Session

Track Classification: Searches for Supersymmetry

Contribution ID: 293

Type: **Poster**

A search for R-parity violating decays of the top squark in four jet final states with the ATLAS experiment at $\sqrt{s} = 13$ TeV

Author: VEERARAGHAVAN, Venkatesh (University of Arizona (US))

Presenter: VEERARAGHAVAN, Venkatesh (University of Arizona (US))

Session Classification: Poster Session

Track Classification: Searches for Supersymmetry

Contribution ID: 294

Type: **Poster**

ATLAS searches for squarks and gluinos using leptons or multiple b-jets with 3.2 fb⁻¹ of pp collisions at 13 TeV

Author: RIFKI, Othmane (University of Oklahoma (US))

Presenter: RIFKI, Othmane (University of Oklahoma (US))

Session Classification: Poster Session

Track Classification: Searches for Supersymmetry

Contribution ID: 295

Type: **Poster**

Search for scalar leptoquarks at $\sqrt{s}=13$ TeV with ATLAS

Author: PLESKOT, Vojtech (Johannes-Gutenberg-Universitaet Mainz (DE))

Presenter: PLESKOT, Vojtech (Johannes-Gutenberg-Universitaet Mainz (DE))

Session Classification: Poster Session

Track Classification: New Exotic phenomena and Dark Matter searches

Contribution ID: 296

Type: **Poster**

Search for exotic production of top quarks decaying into same-sign leptons

Author: BERLENDIS, Simon Paul (Centre National de la Recherche Scientifique (FR))

Presenter: BERLENDIS, Simon Paul (Centre National de la Recherche Scientifique (FR))

Session Classification: Poster Session

Track Classification: New Exotic phenomena and Dark Matter searches

Contribution ID: 297

Type: **Poster**

Searches for hadronically decaying Dark Matter mediator particles at ATLAS

Author: Mr NINDHITO, Herjuno Rah (Lund University (SE))

Presenter: Mr NINDHITO, Herjuno Rah (Lund University (SE))

Session Classification: Poster Session

Track Classification: New Exotic phenomena and Dark Matter searches

Contribution ID: 298

Type: **Poster**

Search for long-lived neutral particles decaying into lepton-jets with the ATLAS Detector

Author: VERDUCCI, Monica (Universita e INFN, Roma I (IT))

Presenter: VERDUCCI, Monica (Universita e INFN, Roma I (IT))

Session Classification: Poster Session

Track Classification: New Exotic phenomena and Dark Matter searches

Contribution ID: 299

Type: **Poster**

Searches for heavy diboson resonances at $\sqrt{s} = 13$ TeV with the ATLAS detector

Author: SOGAARD, Andreas (University of Edinburgh (GB))

Presenter: SOGAARD, Andreas (University of Edinburgh (GB))

Session Classification: Poster Session

Track Classification: New Exotic phenomena and Dark Matter searches

Contribution ID: **300**

Type: **Poster**

New particle-flow based reconstruction of hadronic tau decays with the ATLAS experiment.

Author: WINTER, Benedict Tobias (Universitaet Bonn (DE))

Presenter: WINTER, Benedict Tobias (Universitaet Bonn (DE))

Session Classification: Poster Session

Track Classification: LHC experiments: performance and potential

Contribution ID: **301**

Type: **Poster**

Reconstruction and identification of hadronically decaying tau leptons with the ATLAS experiment.

Author: OHMAN, Henrik (Uppsala University (SE))

Presenter: OHMAN, Henrik (Uppsala University (SE))

Session Classification: Poster Session

Track Classification: LHC experiments: performance and potential

Contribution ID: 302

Type: **Poster**

High-pT Jet Energy Scale Uncertainty from single hadron response with the ATLAS detector

Author: POULSEN, Trine (Lund University (SE))

Presenter: POULSEN, Trine (Lund University (SE))

Session Classification: Poster Session

Track Classification: LHC experiments: performance and potential

Contribution ID: 303

Type: **Poster**

Robustness of the ATLAS pixel clustering neural network algorithm

Author: SIDEBO, Per Edvin (KTH Royal Institute of Technology (SE))

Presenter: SIDEBO, Per Edvin (KTH Royal Institute of Technology (SE))

Session Classification: Poster Session

Track Classification: LHC experiments: performance and potential

Contribution ID: 304

Type: **Poster**

Profiling Z' bosons using charge asymmetry in top pair production with the lepton-plus-jets final state at the LHC

We study the sensitivity of top pair production and six-fermion decay at the LHC to the presence and nature of an underlying Z' boson, accounting for full tree-level Standard Model interference, with all intermediate particles allowed off-shell. We concentrate on the lepton-plus-jets final state and simulate experimental considerations, including kinematic requirements and top quark pair reconstruction in the presence of missing transverse energy and combinatorial ambiguity in jet-top assignment. We focus on the differential mass spectra, as well as the charge asymmetry, demonstrating the use of this asymmetry in probing the coupling structure of a new neutral resonance, as well as cases in which the asymmetry forms a complementary discovery observable.

Author: MILLAR, Declan (University of London (GB))

Co-authors: SPANO, Francesco (Royal Holloway, University of London (GB)); CERRITO, Lucio (University of London (UK)); MORETTI, Stefano (STFC - Rutherford Appleton Lab. (GB))

Presenter: MILLAR, Declan (University of London (GB))

Session Classification: Poster Session

Track Classification: Top Quark physics

Contribution ID: 305

Type: **Talk**

Real-time physics: novel concepts for trigger, calibration & alignment, and data processing with LHCb

The LHCb detector consists of subsystems designed to perform high efficiency tracking (>95%) with an excellent momentum resolution (0.5% for $p < 20$ GeV). Two Ring Imaging Cherenkov detectors provide precise particle identification. In Run II of the LHC, a new scheme for the LHCb software trigger allows splitting the triggering of the event in two stages, giving room to perform the alignment and calibration in real time. In the novel detector alignment and calibration strategy for Run II, data collected at the start of the fill are processed in a few minutes and used to update the alignment, while the calibration constants are evaluated for each run. This allows identical constants to be used in the online and offline reconstruction. The larger timing budget, available in the trigger, results in the convergence of the online and offline reconstruction. The same performance of the track reconstruction and PID are achieved online and offline. This offers the opportunity to optimise the event selection in the trigger with stronger constraints and including the hadronic PID. It additionally increases selection efficiencies and purity and reduces systematic uncertainties. In turn this gives the possibility to finalise physics analyses directly from data objects produced by the online reconstruction. The novel real-time alignment and calibration strategy at LHCb is discussed from both the operational and physics performance points of view. The overall performances of the LHCb detector on the first data of Run II are presented.

Author: GRILLO, Lucia (Universita & INFN, Milano-Bicocca (IT))

Presenter: GRILLO, Lucia (Universita & INFN, Milano-Bicocca (IT))

Session Classification: Performance

Track Classification: LHC experiments: performance and potential

Contribution ID: 306

Type: **not specified**

Test of the Standard Model and Search for New Physics Using Unitarity Triangle Fits

Friday, June 17, 2016 5:40 PM (15 minutes)

Presenter: PAUL, Ayan (INFN, Sezione di Roma)

Session Classification: Heavy Flavour

Contribution ID: **307**

Type: **not specified**

Search for exotic multiquark states in $p\bar{p}$ collisions at D0

Presenter: DRUTSKOY, Alexey (ITEP Institute for Theoretical and Experimental Physics (ITEP))

Session Classification: Heavy Flavour

Contribution ID: **308**

Type: **Talk**

Impact of LHC measurements on parton density functions

Session Classification: QCD

Contribution ID: **309**

Type: **not specified**

Panel Session: New Challenges in Outreach & Communication

Monday, June 13, 2016 5:30 PM (30 minutes)

Session Classification: Outreach

Contribution ID: 310

Type: **not specified**

Searches for Vector-Like Quarks with ATLAS and CMS

Friday, June 17, 2016 11:00 AM (15 minutes)

Presenter: MARLEY, Daniel (University of Michigan (US))

Session Classification: Exotics & Dark Matter

Contribution ID: 311

Type: **Poster**

Drell-Yan process at the LHC in p+Pb collisions

The Drell-Yan (DY) process stands for a unique probe to testing initial-state effects that is not accompanied with any final state interaction, either energy loss or absorption. Moreover, the measured DY dilepton pair mass allows to investigate different kinematical regions where coherence or non-coherent effects are expected only. For this purpose, we used the color dipole approach where for the first time the contribution of Z boson relevant at large dilepton invariant masses was included. We analyze several effects affecting the nuclear suppression, $R_{pA} < 1$, of dilepton pairs, such as nuclear shadowing (coherence effect) and effective energy loss due to initial state interactions (ISI) effects (non-coherent effects), which cause a strong suppression at large p_T and forward rapidities and lead to the breakdown of the QCD factorisation. We perform predictions of the strong nuclear attenuation of produced dileptons due to the nuclear shadowing at small p_T , forward rapidities and small dilepton masses. Besides, we also predict strong suppressions at large p_T and large dilepton masses, where coherence effects are not expected, due to ISI effects that can be verified by the LHC experiments. Nuclear effects are studied also in terms of the correlation function in azimuthal angle between dilepton pair and a forward pion. We predict a characteristic double-peak structure of the correlation function arises for very forward pions and large-mass dilepton pairs.

Author: Dr KRELINA, Michal (FNSPE CTU in Prague)

Co-authors: A. F. BASSO, Eduardo; NEMCHIK, Jan (Czech Technical University in Prague (CZ) and Institute of Experimental Physics, Kosice (SK)); PASECHNIK, Roman (Lund University); GONCALVES, Victor (Universidade Federal de Pelotas)

Presenter: Dr KRELINA, Michal (FNSPE CTU in Prague)

Session Classification: Poster Session

Track Classification: Physics of Heavy Ion collisions

Contribution ID: 312

Type: **Poster**

The Timepix3 Telescope and LHCb Upgrade R&D measurements

The upgrade of the LHCb experiment will operate at an instantaneous luminosity of $2 \times 10^{33} \text{ cm}^{-2} \text{ s}^{-1}$ with a fully software based trigger, allowing to read out the detector at a rate of 40MHz. The tracking system will be redesigned: the vertex locator (VELO) will be replaced by a pixel-based detector, upstream of the magnet, a silicon micro-strip detector with a high granularity and an improved acceptance coverage, called the Upstream

Tracker (UT), will replace the presently installed silicon strip tracker. The tracking system downstream of the magnet will be replaced by the Scintillating Fibre tracker (SciFi), which will consist of scintillating fibres read out by silicon photo-multipliers. We will present the ongoing work on vertex pixel detector and cover sensor technology, readout chip and a novel micro-channel cooling system, designed especially for the upgraded Velo.

Author: RACHWAL, Bartlomiej (Polish Academy of Sciences (PL))

Presenter: RACHWAL, Bartlomiej (Polish Academy of Sciences (PL))

Session Classification: Poster Session

Track Classification: Upgrade plans and future colliders

Contribution ID: 314

Type: **Talk**

Theory of hard probes in PbPb collisions

The jet quenching phenomena in heavy ion collisions provide a strong evidence of the modification of parton shower in the quark-gluon plasma (QGP). Jet substructure observables can probe various aspects of the jet formation mechanism and allow us to study the medium properties in great details. Here we focus on the hard probes using jets and present theoretical calculations of jet shapes and cross sections in proton-proton and lead-lead collisions at the LHC using soft-collinear effective theory, with Glauber gluon interactions in the medium. Resumming large logarithms in the jet substructure calculation is necessary for precise theoretical predictions, and it can be performed using renormalization group evolution between characteristic jet scales. Also, the medium induces power corrections to jet shapes due to the Landau-Pomeranchuk-Migdal effect. We present the comparison between our calculations with the recent measurements at the LHC with very good agreement. Our calculations help initiate precise jet modification studies in heavy ion collisions.

Author: Dr CHIEN, Yang-Ting (Los Alamos National Laboratory)

Presenter: Dr CHIEN, Yang-Ting (Los Alamos National Laboratory)

Session Classification: Heavy Ion

Track Classification: Physics of Heavy Ion collisions

Contribution ID: 315

Type: **Poster**

Studies of Higgs boson production in the four-lepton final state at $\sqrt{s}=13\text{TeV}$

Studies of Higgs boson production using the $H \rightarrow ZZ \rightarrow 4l$ decay channel are performed using a data sample corresponding to an integrated luminosity of 2.8 fb^{-1} of pp collisions at a center-of-mass energy of 13 TeV collected by the CMS experiment at the LHC during 2015. The observed significance for the standard model Higgs boson with $m_H = 125.09 \text{ GeV}$ is 2.5σ , where the expected significance is 3.4σ . The model independent fiducial cross section is measured to be $\sigma_{\text{fid.}} = 2.48^{+1.48}_{-1.14}(\text{stat.} + \text{sys.}) + 0.01 - 0.04(\text{model dep.}) \text{ fb}$. In addition, a search for an additional Higgs boson is performed for a range of masses up to 1 TeV and with various widths, and no significant excess is observed. The results of this search are interpreted in the context of the two Higgs doublet model.

Author: CHENG, Tongguang (Chinese Academy of Sciences (CN))

Presenter: CHENG, Tongguang (Chinese Academy of Sciences (CN))

Session Classification: Poster Session

Track Classification: Higgs physics in the Standard Model and beyond

Contribution ID: **316**

Type: **not specified**

Discussion

Friday, June 17, 2016 12:15 PM (15 minutes)

Session Classification: Heavy Flavour

Contribution ID: 317

Type: **not specified**

Reception & welcome address by Christina Sjöström (Deputy Mayor of the City of Lund)

Session Classification: Higgs

Contribution ID: 318

Type: **Poster**

Radiative origin of the Standard Model from trinification

In this work, we present a trinification-based Grand Unified Theory (GUT) incorporating a global $SU(3)$ flavour symmetry that after a spontaneous breaking leads to a Left-Right (LR) symmetric model. Already at the classical level, this model can accommodate the matter content and the quark Cabibbo mixing in the Standard Model (SM) with only one Yukawa coupling at the unification scale. Considering the minimal low-energy scenario with the least amount of light states, we show that the resulting effective theory enables dynamical breaking of its gauge group down to that of the SM by means of radiative corrections accounted for by the Renormalisation Group evolution at one loop. This result paves the way for a consistent explanation of the SM breaking scale and hierarchies.

Author: WESSÉN, Jonas (Lund University)

Co-authors: MORAIS, Antonio (Aveiro University); Dr CAMARGO MOLINA, José Eliel (Lund University); PASECHNIK, Roman (Lund University)

Presenter: WESSÉN, Jonas (Lund University)

Session Classification: Poster Session

Track Classification: New Exotic phenomena and Dark Matter searches