Exotic Searches at ATLAS

Tuesday, 15 March 2011 17:45 (20 minutes)

We present the first results of searches for New Physics with the ATLAS detector using the 2010 LHC pp-collision data at $\sqrt{s} = 7$ TeV. After a few months of operations, these searches already go beyond the reach of previous experiments, and start to explore new territories.

**Primary author:** Prof. GINGRICH, Douglas (University of Alberta/TRIUMF)

**Presenter:** Prof. GINGRICH, Douglas (University of Alberta/TRIUMF)

**Session Classification:** Beyond the Standard Model

**Track Classification:** Experiment
Measurement of K+ Production in a Few-GeV Neutrino Beam

The primary motivation for this analysis is to verify the simulation of K+ production from the Booster Neutrino Beam (BNB) line with actual data from the SciBooNE experiment. The BNB line provides neutrinos for current and future experiments. While neutrino flux is predominately due to pion decay, K+ decay is the dominant source above 2 GeV. An accurate understanding of K+ production will reduce systematics associated with the measured electron neutrino background in MiniBooNE, a major contributor to the uncertainty in the previously published electron neutrino oscillation appearance result.

The goal of the analysis is to measure K+ production through its decay product: muon neutrinos. The muon neutrinos undergo charged current neutrino interactions in the fiducial volume of the SciBooNE detector, generating high energy muons, which can be selected for. The results to be presented measure the K+ production through its overall normalization at two distinct K+ energies.

Primary author: Mr CHENG, Gary (Columbia University)

Presenter: Mr CHENG, Gary (Columbia University)

Session Classification: Young Scientist Forum 3

Track Classification: Experiment
Searches for lepton flavour and lepton number violation in kaon decays at CERN

Wednesday, 16 March 2011 17:40 (15 minutes)

Searches for lepton flavour and lepton number violation in kaon decays by the CERN NA48 and NA62 experiments are reported. A new measurement of the helicity suppressed ratio of charged kaon leptonic decay rates to sub-percent precision at the CERN NA62 experiment is presented. The strong suppression and the high precision of the SM expectation provide a unique sensitivity to deviations from lepton universality arising in multi-Higgs new physics models. A new upper limit on the K⁺ → π⁺μ⁺μ⁺ decay rate from the CERN NA48 experiment is presented, which translates into the most stringent direct constraint on the corresponding effective Majorana neutrino mass, and can be used to constrain SUSY models.

Primary author: Dr GOUDZOVSKI, Evgueni (Universite catholique de Louvain)
Presenter: Dr GOUDZOVSKI, Evgueni (Universite catholique de Louvain)
Session Classification: Flavour Physics - Lepton Flavour - Neutrinos
Track Classification: Experiment
MINERvA (Main INjEctoR nu-A) is a new few-GeV neutrino cross section experiment that began taking data in the FNAL NuMI beam-line in the Fall of 2009. MINERvA employs a fine-grained detector capable of complete kinematic characterization of neutrino interactions. We employ a three ton active target region composed of plastic scintillator with additional carbon, iron, and lead targets upstream of the active region. The experiment will provide important inputs for neutrino oscillation searches and a pure weak probe of nuclear structure. We will offer a set of initial kinematic distributions of interest and provide a general status update.

Summary

MINERvA (Main INjEctoR nu-A) is a new few-GeV neutrino cross section experiment that began taking data in the FNAL NuMI beam-line in the Fall of 2009. MINERvA employs a fine-grained detector capable of complete kinematic characterization of neutrino interactions. We employ a three ton active target region composed of plastic scintillator with additional carbon, iron, and lead targets upstream of the active region. The experiment will provide important inputs for neutrino oscillation searches and a pure weak probe of nuclear structure. We will offer a set of initial kinematic distributions of interest and provide a general status update.

Primary author: Dr PERDUE, Gabriel (The University of Rochester)
Presenter: Dr PERDUE, Gabriel (The University of Rochester)
Session Classification: Neutrinos
Track Classification: Experiment
Lower bound on extragalactic magnetic fields

Thursday, 17 March 2011 17:40 (15 minutes)

Combining data from the recently launched Fermi satellite with TeV observations of atmospheric Cherenkov telescopes and low-energy observations has improved our understanding of the sources of high-energy radiation as well as of the conditions in the intergalactic space. After a brief introduction, I show that the non-observation of some TeV blazars in the GeV range by the Fermi satellite lead to the first lower limit on the intergalactic magnetic field (IGMF). Moreover, the IGMF has to fill more than ~50% of the Universe, suggesting its primordial creation in inflation or phase transitions. Finally, I discuss the constraints on these mechanisms.

Primary author: KACHELRIESS, Michael (Department of Physics, NTNU)
Presenter: KACHELRIESS, Michael (Department of Physics, NTNU)
Session Classification: Neutrinos to Astroparticles
Track Classification: Theory
GERDA commissioning results and summary of double beta decay projects

Saturday, 19 March 2011 08:50 (20 minutes)

The Germanium Detector Array (GERDA) experiment searches for neutrinoless double beta decay of Ge-76, a test of whether neutrinos are identical with their anti-particles, i.e. of Majorana type, or distinct from them, i.e. of Dirac type. Neutrinoless double beta decay could not only establish the charge-conjugation character of neutrinos, but also place a limit on the effective neutrino mass and probe the neutrino mass hierarchy.

Germanium crystals enriched in Ge-76, acting as source and detector, will be submerged in an ultra-pure cryogenic liquid that serves as cooling medium and shields against radiation. This allows for a background reduction of up to two orders of magnitude better than earlier experiments. The status of the GERDA experiment, installed in hall A of the underground laboratory of LNGS (INFN, Italy), will be presented. The expected performance will be compared to other neutrinoless double beta decay searches that start commissioning in the near future.

Primary author: Dr COSSAVELLA, Fabiana (Max-Planck-Institut fuer Physik)
Presenter: Dr COSSAVELLA, Fabiana (Max-Planck-Institut fuer Physik)
Session Classification: Neutrinos - Precision tests - Cosmology
Track Classification: Experiment
New Tevatron Searches for BSM physics

*Tuesday, 15 March 2011 09:40 (15 minutes)*

New results from searches of physics beyond the standard model, extracted from data collected by the CDF and D0 experiments at the Fermilab Tevatron, will be presented.

**Primary author:** Dr JAFFRÉ, Michel (Laboratoire de l’Accélérateur Linéaire)

**Presenter:** Dr JAFFRÉ, Michel (Laboratoire de l’Accélérateur Linéaire)

**Session Classification:** Beyond the Standard Model

**Track Classification:** Experiment
The QCD production of Quarkonia and high-PT B-hadrons are important processes as a probe of perturbative QCD. High-PT B-hadrons also form a significant background to many new physics channels at the LHC.

The inclusive production of the J/psi and Upsilon mesons is studied in the dimuon decay mode. The double-differential cross section is measured with respect to the transverse momentum and rapidity of the corresponding meson. In addition the ratio of J/psi mesons produced from B hadron decays to those produced from prompt QCD sources is measured as a function of J/psi transverse momentum.

The b-jet production measurement starts from the samples used to measure the jet production cross-sections in the full 2010 data sample and derives the corresponding differential cross-sections for jets containing a B-hadron. B-tagging techniques are used to measure the fraction of jets containing a B hadron, and the results are compared to calculations of the B cross-section based on Monte Carlos and on higher order QCD. Future prospects for studying B-physics with ATLAS are also briefly described.

Summary

Heavy flavor results from the first year of ATLAS collisions are presented and compared with model predictions and QCD calculations, along with a brief survey of future prospects.

Primary author:  Prof. JONES, Roger (Lancaster University)
Presenter:  Prof. JONES, Roger (Lancaster University)
Session Classification:  Flavour Physics
Track Classification:  Experiment
The Shadow of the Moon in IceCube

Friday, 18 March 2011 19:26 (6 minutes)

IceCube is the world’s largest neutrino telescope, recently completed at the South Pole. As a proof of pointing accuracy, we look for the image of the Moon as a deficit in down-going cosmic ray muons, using techniques similar to those used in IceCube’s astronomical point-source searches.

Primary author: GLADSTONE, Laura (University of Wisconsin, Madison)
Presenter: GLADSTONE, Laura (University of Wisconsin, Madison)
Session Classification: Young Scientist Forum 3
Track Classification: Experiment
Lower bounds on EDMs from D0 mixing in SUSY

Wednesday, 16 March 2011 17:00 (15 minutes)

The SM predictions for CP violating effects in the neutral D meson system are highly suppressed and experimental evidence for sizable CP violation in D0-D0bar mixing would be a clear signal of New Physics. Within supersymmetric scenarios, the popular alignment models can naturally account for large, non-standard effects in D0-D0bar mixing. We show that, within SUSY alignment models, detectable CP violating effects in D0-D0bar mixing would unambiguously imply a lower bound for the electric dipole moment (EDM) of hadronic systems, like the neutron EDM and the mercury EDM, in the reach of future experimental sensitivities. The simultaneous evidence of CP violation in D0-D0bar mixing together with non vanishing hadronic EDMs would strongly support the idea of SUSY alignment models and disfavour gauge-mediated SUSY breaking models, SUSY models with MFV and non-Abelian SUSY flavour models.

Primary author:  Dr ALTMANNSHOFER, Wolfgang (Fermilab)
Co-authors:  Prof. BURAS, Andrzej (TU Munich); Dr PARADISI, Paride (TU Munich)
Presenter:  Dr ALTMANNSHOFER, Wolfgang (Fermilab)
Session Classification:  Flavour Physics - Lepton Flavour - Neutrinos
Track Classification:  Theory
Tokyo axion helioscope experiment and other axion experiments

*Friday, 18 March 2011 17:25 (1h 20m)*

The axion is a hypothetical particle which was introduced to explain the magical CP conservation in QCD. The Tokyo axion helioscope aims to detect axions which can be produced in the sun if axions exist. It is equipped with a 2.3m-long 4T superconducting magnet to convert axions into photons, a gas container to hold dispersion-matching medium, a PIN-photodiode-array X-ray detector, and a telescope mount mechanism to track the sun. In the past measurements, axion mass up to 0.27eV have been scanned. Currently, we are in a new phase, where the mass region at around 1eV and higher is targeted. In my talk, the latest result and the status of this experiment will be presented with the comparison with other solar axion searches including CAST. Some other axion search experiments will also be reviewed briefly.

**Primary author:** Mr INOUE, Yoshizumi (University of Tokyo)

**Co-authors:** Prof. YAMAMOTO, Akira (KEK); Prof. MINOWA, Makoto (University of Tokyo); Mr OHTA, Ryosuke (University of Tokyo); Mr MIZUMOTO, Tetsuya (University of Tokyo); Dr AKIMOTO, Yuki (University of Tokyo)

**Presenter:** Mr INOUE, Yoshizumi (University of Tokyo)

**Session Classification:** Astroparticles - Dark Matter

**Track Classification:** Experiment
The recent results of the solar neutrino measurement in Borexino

Saturday, 19 March 2011 18:20 (15 minutes)

The recent solar neutrino measurements in Borexino will be discussed. This presentation will be the first time for newly releasing the results in Borexino.

The first realtime 7Be solar neutrino measurement succeeded in Borexino in 2008. After that, due to the precise detector calibration in 2009, the uncertainty of the 7Be flux measurement will be at 5% level. This result is important, at first, to validate the MSW-LMA oscillation model in vacuum, and at the second, to restrict the evaluation in pp solar neutrino flux. Those issues are discussed.

Next, the result related to the day/night effect in the 7Be energy region will be discussed. This is important to confirm with only the solar neutrino data (without the reactor antineutrinos) that the LMA is the only solution. In addition to that, it is also possible to check if one of the non standard interaction hypothesis, called MaVaN, is valid or not.

Primary author: Dr KOSHIO, Yusuke (LNGS, INFN)
Presenter: Dr KOSHIO, Yusuke (LNGS, INFN)
Session Classification: Neutrinos
Track Classification: Experiment
Physics Potential of Stopped Pion Neutrino Source

Saturday, 19 March 2011 17:40 (15 minutes)

A stopped pion source provides neutrino beams with energy of a few tens of MeV from pion and muon decay-at-rest. A rich physics program can be accomplished with such a neutrino source. In this talk, I will discuss the role of such a neutrino facility to test LSND and to study CP violation in active neutrinos. I will also mention its applications in electroweak precision physics and new physics studies.

**Primary author:** Dr AGARWALLA, Sanjib Kumar (IFIC, CSIC and University of Valencia)

**Presenter:** Dr AGARWALLA, Sanjib Kumar (IFIC, CSIC and University of Valencia)

**Session Classification:** Neutrinos

**Track Classification:** Experiment
CP violation studies in B decays with LHCb

Thursday, 17 March 2011 09:35 (15 minutes)

The study of CP violation (CPV) in B decays is a powerful tool to search for new physics beyond the Standard Model. The LHCb experiment will be able to improve the precision of many measurements that have been performed at the B-factories, and make the first high precision studies of CPV in the B_s system. First results will be presented from the 2010 LHC run, and future prospects reviewed.

Primary author: Dr XIE, Yuehong (University of Edinburgh)
Presenter: Dr XIE, Yuehong (University of Edinburgh)
Session Classification: Flavour Physics and Leptogenesis
Track Classification: Experiment
Observation of Ultra High Energy Cosmic Ray at Telescopearray experiment

Thursday, 17 March 2011 18:40 (15 minutes)

The Telescope Array (TA) experiment, located in the western desert of Utah, USA, at 39.3° north and 112.9° west, is designed for observation of air showers from extreme high energy cosmic rays. The experiment has a Surface Detector (SD) array surrounded by three Fluorescence Detectors (FD) to enable simultaneous detection of shower particles at ground level and fluorescence photons along the shower track. The telescope array Surface Detector and Fluorescence Detectors started full hybrid observation at mar,2008. Here, we present status and performance of detectors and recent result of observation.

Primary author: Dr NONAKA, Toshiyuki (University of Tokyo)
Presenter: Dr NONAKA, Toshiyuki (University of Tokyo)
Session Classification: Neutrinos to Astroparticles
Track Classification: Experiment
Status of the Double Chooz experiment

Saturday, 19 March 2011 18:00 (15 minutes)

The Double Chooz experiment is meant to search for the neutrino mixing angle $\theta_{13}$ taking advantage of the neutrinos generated at the nuclear power plant of Chooz. Double Chooz relies on neutrino flux measurements at two different locations, the so-called far an near detectors, although the first phase runs only with the far detector. The commissioning of the far detector started in January 2011 and first results improving the current limit on $\theta_{13}$ are expected by the summer 2011. The status of the Double Chooz experiment and results from the commissioning period are presented in this talk.

Primary author: Dr NOVELLA GARIJO, Pau (CIEMAT)
Presenter: Dr NOVELLA GARIJO, Pau (CIEMAT)
Session Classification: Neutrinos
Track Classification: Experiment
Neutrino Data Analysis with the ArgoNeuT Project

*Saturday, 19 March 2011 19:40 (15 minutes)*

The Argon Neutrino Teststand, or ArgoNeuT, project at Fermilab operated a 175 liter Liquid Argon Time Projection Chamber (LArTPC) detector in the NuMI neutrino beam from Sept. 2009 through Feb. 2010. During this time $1.35 \times 10^{20}$ Protons on Target were collected, predominantly in the antineutrino configuration of the NuMI beam. In this talk preliminary attempts to reconstruct and analyze the data sample will be presented, along with a discussion of prospects for future results.

Primary author: Prof. SODERBERG, Mitchell (Syracuse University)

Presenter: Prof. SODERBERG, Mitchell (Syracuse University)

Session Classification: Neutrinos

Track Classification: Experiment
This presentation reviews the search for the Standard Model Higgs boson at the D0 experiment with the final state containing two taus and at least two jets. Data from Run 2b of the D0 experiment are used with an integrated luminosity of 4.3 \text{ fb}. This final state is sensitive the production mechanisms gluon gluon fusion, vector boson fusion, and associated Higgs production with a W or Z, for Higgs masses from 100 to 200 GeV. No evidence for the Higgs boson is yet observed, so upper limits are placed on the cross section of the Standard Model Higgs production.

**Primary author:** Ms TSCHANN-GRIMM, Kathryn (Stony Brook University)

**Presenter:** Ms TSCHANN-GRIMM, Kathryn (Stony Brook University)

**Session Classification:** Young Scientists Forum 1

**Track Classification:** Experiment
Exotica Searches at CMS

Tuesday, 15 March 2011 17:20 (20 minutes)

We discuss the results of searches for various new physics phenomena in the pp collisions at 7 TeV delivered by LHC and collected with the CMS detector in 2010. While the sensitivity of these early searches varies, in many cases they set the most stringent limits on these new physics phenomena. These results demonstrate good understanding of the detector and backgrounds in a variety of channels, which is a fundamental component of successful searches in view of the much larger data sample expected to be delivered by LHC in 2011 and beyond.

Primary authors: CMS, Collaboration (-); Dr SANTANASTASIO, Francesco (University of Maryland)

Presenter: Dr SANTANASTASIO, Francesco (University of Maryland)

Session Classification: Beyond the Standard Model

Track Classification: Experiment
First ATLAS searches for signals of Supersymmetry in proton-proton collisions at the LHC are presented. These searches are performed in various channels containing different lepton and jet multiplicities in the final states; the full data sample recorded in the 2010 LHC run, corresponding to an integrated luminosity of 35 pb$^{-1}$, has been analysed. The limits on squarks and gluinos are the most stringent to date.

**Primary author:** Dr CARON, Sascha (University of Freiburg)

**Presenter:** Dr CARON, Sascha (University of Freiburg)

**Session Classification:** Beyond the Standard Model

**Track Classification:** Experiment
Dark Matter constraints from LEP data

Friday, 18 March 2011 10:55 (15 minutes)

We analyze LEP monophoton data to set limits on the Dark Matter (DM) production cross section in the process $e^+e^- \rightarrow \chi \chi \gamma$, where $\chi$ is the DM particle. We then translate these limits into constraints on the DM-nucleon and DM-electron scattering cross sections and on the DM annihilation cross sections. In doing so, we consider different types of DM interactions (scalar, vector, and axial vector interactions), we distinguish between interactions mediated by light and heavy intermediate particle, and we consider both leptophilic and nucleophilic scenarios. In many of these scenarios our limits on the DM scattering cross sections are superior to those from direct detection experiments if DM is light ($< 10$-100 GeV). Our constraints on the DM annihilation cross section are highly competitive as well, for example we are able to rule out a light ($< 10$ GeV) thermal relic in many cases.

Primary author: Dr KOPP, Joachim (Fermilab)

Co-authors: Dr FOX, Patrick (Fermilab); Dr HARNIK, Roni (Fermilab); Mr YUHSIN, Tsai (Cornell University & Fermilab)

Presenter: Dr KOPP, Joachim (Fermilab)

Session Classification: Astroparticles - Dark Matter

Track Classification: Experiment
First Results from the T2K Experiment

Saturday, 19 March 2011 17:20 (15 minutes)

T2K is a long baseline high intensity neutrino oscillation experiment employing an off-axis design to search for the as yet unseen appearance of $\nu_e$ neutrinos in a $\nu_{\mu}$ beam. The neutrino beam originates at the J-PARC facility in Tokai, Japan and the Super-Kamiokande (SK) detector, located 295 km away, measures the composition of the oscillated beam. The SK data is searched for an excess of $\nu_e$ neutrinos, constraining the allowed parameter space of $\sin^2(2\theta_{13})$, the parameter governing the amplitude of oscillations from $\nu_{\mu}$ to $\nu_e$. This amplitude is of particular interest since it also modulates the amplitude of CP violating terms in the lepton mixing matrix. T2K will also precisely measure $\delta m^2_{23}$ and $\sin^2(2\theta_{23})$, the parameters governing the disappearance of $\nu_{\mu}$. In this talk, I will present results from the first T2K physics run in 2010 with $3.23 \times 10^{19}$ protons on target.

Primary author: Dr HARTZ, Mark (University of Toronto/York University)
Presenter: Dr HARTZ, Mark (University of Toronto/York University)
Session Classification: Neutrinos
Track Classification: Experiment
With over 45/pb of 7 TeV pp collisions recorded, the Atlas standard model physics program is well under way. This talk surveys our latest tests of the standard model at this unprecedented energy scale. An overview of recent results will be given. Measurements of electro-weak boson properties, top-quark production, and di-boson production will be highlighted.

Primary author: Mr ALISON, John (University of Pennsylvania)
Presenter: Mr ALISON, John (University of Pennsylvania)
Session Classification: The Standard Model and beyond
Track Classification: Experiment
The 2010 data on quark flavour physics reveal a considerable tension with the Standard Model. However, an excellent fit is found if one permits new physics in the amplitudes describing meson-antimeson mixing in the B_d and B_s systems. The corresponding global analysis disfavours the Standard Model at the level of 3.6 standard deviations and calls for new sources of CP violation in the B-Bbar mixing amplitudes. An interpretation within the Minimal Supersymmetric Standard Model (MSSM) must go beyond the popular assumption of Minimal Flavour Violation (MFV). Grand unified theories can provide additional sources of quark flavour violation which are governed by the lepton mixing matrix. I present the results of a global analysis of an SO(10) GUT model, which accommodates a large CP phase in B_s - B_s-bar mixing while being consistent with other constraints. I discuss the correlations between quark and lepton flavour physics and the sparticle spectrum which arise from the GUT boundary conditions.

**Primary author:** Prof. NIERSTE, Ulrich (TTP, Karlsruhe Institute of Technology)

**Presenter:** Prof. NIERSTE, Ulrich (TTP, Karlsruhe Institute of Technology)

**Session Classification:** Flavour Physics

**Track Classification:** Theory
Reconciling Supersymmetry and Thermal Leptogenesis

Thursday, 17 March 2011 11:20 (15 minutes)

The entropy produced in the decays of super-weakly interacting particles may help to reconcile thermal leptogenesis and Big Bang Nucleosynthesis (BBN) in scenarios with gravitino dark matter, which is usually difficult due to late decays of the next-to-lightest supersymmetric particle (NLSP) spoiling BBN. We study this possibility for a general neutralino NLSP. We discuss the constraints on the entropy-producing particle, considering as an example the saxion from the axion multiplet. We show that, in addition to enabling a solution of the strong CP problem, it can indeed produce a suitable amount of entropy.

Primary authors: Mr HASENKAMP, Jasper (University of Hamburg); Dr KERSTEN, Joern (University of Hamburg)

Presenter: Dr KERSTEN, Joern (University of Hamburg)

Session Classification: Flavour Physics and Leptogenesis

Track Classification: Theory
Implications of early LHC results

Tuesday, 15 March 2011 10:20 (15 minutes)

We discuss implications of the first LHC results about supersymmetry and large extra dimensions. In particular we derive the new dominant bound on tree-level graviton exchange from pp \rightarrow jj data

Primary author: STRUMIA, Alessandro (Pisa Univ & INFN & NICPB)
Presenter: STRUMIA, Alessandro (Pisa Univ & INFN & NICPB)
Session Classification: Beyond the Standard Model
Track Classification: Theory
Dark Matter candidates: axinos and gravitinos

Friday, 18 March 2011 17:00 (20 minutes)

We will review the scenarios of axino or gravitino Dark Matter, highlight recent theoretical developments and discuss possible signatures in the SUSY searches at the LHC.

Primary author: Prof. COVI, Laura (Institute for theoretical physics - Goettingen University)

Presenter: Prof. COVI, Laura (Institute for theoretical physics - Goettingen University)

Session Classification: Astroparticles - Dark Matter

Track Classification: Experiment
Asymmetric Dark Matter via Leptogenesis

Saturday, 19 March 2011 08:30 (15 minutes)

We discuss the generation of a dark matter asymmetry via new sphaleron processes associated to an extra non-abelian gauge symmetry common to both the visible and the dark sectors. Such a theory can naturally produce an abundance of asymmetric dark matter which is of the same size as the lepton and baryon asymmetries, as suggested by the similar sizes of the observed baryonic and dark matter energy content, and provide a definite prediction for the mass of the dark matter particle around 6 GeV, close to the region favored by DAMA and CoGeNT.

Primary author: Mr FERNANDEZ MARTINEZ, Enrique (CERN)
Presenter: Mr FERNANDEZ MARTINEZ, Enrique (CERN)
Session Classification: Neutrinos - Precision tests - Cosmology
Track Classification: Theory
Updated result of the mu+ -> e+ gamma search in the MEG experiment

Saturday, 19 March 2011 11:35 (15 minutes)

The MEG experiment is searching for the lepton flavor violating decay of a muon, mu+ -> e+ gamma, with a sensitivity that exceeds the previous experiments. Many extensions of the Standard Model, such as Supersymmetric Grand Unified Theories, predict the decay to occur near the current upper limit of the branching ratio. In this talk we present our final, updated result using the 2009 data. Prospects for the 2010 data and the future runs are also discussed.

Primary authors: Dr MORI, Toshinori (The University of Tokyo); Mr NISHIMURA, Yasuhiro (The University of Tokyo)

Presenter: Dr MORI, Toshinori (The University of Tokyo)

Session Classification: Neutrinos - Precision tests - Cosmology

Track Classification: Experiment
IceCube as a discovery observatory for physics beyond the standard model

Thursday, 17 March 2011 17:00 (15 minutes)

IceCube has been completed in December 2010. It forms a lattice of 5160 photomultiplier tubes monitoring a gigaton of the deep Antarctic ice for particle induced photons. The telescope is primarily designed to detect neutrinos with energies greater than 100 GeV from astrophysical sources. Besides this astrophysical motivation IceCube is also a discovery instrument for the search for physics beyond the standard model. Owing to low ice temperatures, the photomultiplier dark noise rates are particularly low which open up tantalizing possibilities for particle detection. This includes the indirect detection of weakly interacting dark matter, direct detection of SUSY particles produced in very high energy interactions, monopoles and strangelets. Also the sensitivity to neutrino properties and Lorentz invariance is considered.

Primary author: Prof. HELBING, Klaus (Wuppertal University)
Presenter: Prof. HELBING, Klaus (Wuppertal University)
Session Classification: Neutrinos to Astroparticles
Track Classification: Experiment
Theoretical Perspectives: XLVI Rencontres de Moriond—Electroweak

Sunday, 20 March 2011 09:00 (45 minutes)

I offer a brief summary, with commentary, of theoretical contributions to Moriond EW 2011.

Primary author:  Prof. QUIGG, Chris (Fermilab)
Presenter:  Prof. QUIGG, Chris (Fermilab)
Session Classification:  Conference Summaries
Track Classification:  Theory
The antineutrino anomaly: implications for the solar neutrino sector

Wednesday, 16 March 2011 19:50 (15 minutes)

The interest around a light sterile neutrino with mass in the eV range has been recently reawakened by the emergence of new anomalies in the neutrino data, which may be explained by hypothesizing oscillations into a new sterile state. The existence of a non-negligible mixing with an additional sterile neutrino specie has important consequences on the remaining neutrino oscillation phenomenology, where it must be incorporated in the framework of a general 3+1 scheme. Here we investigate the perturbations induced in such a scheme on the phenomenology of the solar neutrino sector (solar and KamLAND data), showing that these data allow us to put interesting constraints on the lepton matrix element $U_{e4}$ describing the mixing of the electron neutrino with a fourth neutrino.

Primary author: Dr PALAZZO, Antonio (TUM)
Presenter: Dr PALAZZO, Antonio (TUM)
Session Classification: Flavour Physics - Lepton Flavour - Neutrinos
Track Classification: Theory
A lepton jet is a cluster of highly collimated charged particles: electrons, and possibly muons and pions. Lepton jets arise in a wide class of models that contain light (GeV scale, or less) hidden sector particles. In this class of models the Higgs boson can dominantly decay to lepton jets via a cascade in the hidden sector. I will review the strategies to search for these Higgs decays at hadron colliders.
Recently new reactor antineutrino spectra have been provided for 235U, 239Pu, 241Pu and 238U, increasing the mean flux by about 3 percent. To good approximation, this reevaluation applies to all reactor neutrino experiments. The synthesis of published experiments at reactor-detector distances ≤ 100 m leads to a ratio of observed event rate to predicted rate of 0.979(0.029). With our new flux evaluation, this ratio shifts to 0.937(0.027), leading to a deviation from unity at 98.4% C.L. which we call the reactor antineutrino anomaly. The compatibility of our results with the existence of a fourth non-standard neutrino state driving neutrino oscillations at short distances is discussed. The combined analysis of reactor data, gallium solar neutrino calibration experiments, and MiniBooNE-neutrino data disfavors the no-oscillation hypothesis at 99.93% C.L. The oscillation parameters are such that $|\Delta m^2| \geq 1.5eV^2$ (99% C.L.) and $\sin^2(2\theta) = 0.17(0.1)$ (95% C.L.). Constraints on the theta13 neutrino mixing angle are revised.

**Primary author:** Dr MENTION, Guillaume (CEA Saclay)

**Presenter:** Dr MENTION, Guillaume (CEA Saclay)

**Session Classification:** Flavour Physics - Lepton Flavour - Neutrinos

**Track Classification:** Experiment
Constraints on a Light WIMP from the Diffuse Gamma-Rays

Friday, 18 March 2011 09:35 (15 minutes)

Recently there has been some excitement regarding the possibility of a light dark matter candidate, $M \sim \text{few GeV}$. This is mostly related to the DAMA/Libra, and more recently, the CoGeNT results. In this talk I consider possible indirect constraints on such candidates based on the first 11 months Fermi-LAT data. Specifically, I consider the relevance of gamma-rays from galactic dwarf spheroidals (dSphs) and from the isotropic diffuse background.

Primary author: Dr TYTGAT, Michel (ULB - Université Libre de Bruxelles)
Presenter: Dr TYTGAT, Michel (ULB - Université Libre de Bruxelles)
Session Classification: Astroparticles - Dark Matter

Track Classification: Theory
ANTARES: status and recent results

Thursday, 17 March 2011 17:20 (15 minutes)

ANTARES is an underwater telescope designed to search for high-energy neutrinos originating from extra-terrestrial sources. The detection principle relies on the observation of Cherenkov light emitted along the path of the charged leptons resulting from charged current neutrino interactions. The detector is a 3-dimensional array of photomultiplier tubes, arranged on twelve vertical lines (each housing 75 photomultipliers), placed at a depth of about 2500 meters 40 km off the coast of Toulon, France. The detector has been continuously collecting data in its full configuration since May 2008: at present 5 neutrino per active day are detected. In this talk a status of the detector operation will be provided and first results on the search for cosmic neutrinos, from point-like and diffuse sources, will be described.

Primary author: Dr VECCHI, Manuela (CPPM)
Presenter: Dr VECCHI, Manuela (CPPM)
Session Classification: Neutrinos to Astroparticles
Track Classification: Experiment
Cosmic ray constraints on singlino-like dark matter candidates

Recent results from direct detection experiments (Dama, CoGeNT, CRESST), though subject to debate, seem to point toward a low mass (few GeV) dark matter (DM) particle. However, low mass DM candidates are not easily achieved in the MSSM nor NMSSM. As shown by some authors, singlet extensions of the MSSM can lead to GeV mass neutralinos and satisfy relic abundance constraints. We propose here to extract indirect detection constraints on these models in a generic way from cosmic-ray antiproton measurements (Pamela data)

Primary author:  Dr DELAHAYE, Timur (IFT Madrid)
Co-authors:  Dr CERDEÑO, David (IFT Madrid); Dr LAVALLE, Julien (IFT Madrid)
Presenter:  Dr DELAHAYE, Timur (IFT Madrid)
Session Classification:  Astroparticles - Dark Matter
Track Classification:  Theory
Top polarisation at LHC and new physics

Wednesday, 16 March 2011 09:15 (15 minutes)

Polarisation observables in top quark decays are sensitive probes of possible new physics contributions to the interactions of the heavy third generation quarks. Within an effective theory approach such new physics contributions can be classified in terms of several higher dimensional operators. We investigate the interplay between indirect constraints on such operators, coming mainly from rare B physics processes, and direct measurements of top polarisation observables at the LHC.

Primary author: Dr KAMENIK, Jernej ("Jozef Stefan" Institute)
Presenter: Dr KAMENIK, Jernej ("Jozef Stefan" Institute)
Session Classification: Flavour Physics
Track Classification: Experiment
Extra Dimensions and Electroweak Breaking - Mini Review

Monday, 14 March 2011 19:10 (20 minutes)

I review models of electroweak breaking in warped extra dimensions.

Primary author: Dr VON GERSDORFF, Gero (Ecole Polytechnique)
Presenter: Dr VON GERSDORFF, Gero (Ecole Polytechnique)
Session Classification: The Standard Model and beyond
Track Classification: Theory
Neutrino masses in extra dimensions

Saturday, 19 March 2011 19:20 (15 minutes)

We discuss the effects of extra dimensions on the running of neutrino parameters and possible accelerator observables of neutrinos propagating in extra dimensions. Emphasis will be put on determining which patterns of mixing would be viable at the high-energy scale and how a particular neutrino mass model could affect the observability.

Primary author: Dr BLENNOW, Mattias (Max-Planck-Institut für Physik)
Presenter: Dr BLENNOW, Mattias (Max-Planck-Institut für Physik)
Session Classification: Neutrinos
Track Classification: Theory
Constraints on Low-Mass WIMP signals from CDMS

Friday, 18 March 2011 08:30 (15 minutes)

Two different, previously released, Cryogenic Dark Matter Search (CDMS) data sets have been reanalyzed to improve sensitivity to low-mass Weakly Interacting Massive Particle (WIMP) signals. The first data set was obtained from 2001 to 2002 at the shallow-depth Stanford Underground Facility (SUF) with four germanium and two silicon detectors. The second data set utilized eight germanium detectors at the deep Soudan Underground Laboratory from 2006 to 2008. The SUF data excludes parameter space between 3 and 4 GeV / c^2 while the Soudan result excludes parameter space favored by the DAMA / LIBRA and CoGeNT data as light WIMP signals at the >90% level. Expected performance of new detectors with an interleaved charge readout, also being commissioned at Soudan, will also be discussed.

Primary author: Dr LEMAN, Steven (MIT)
Co-author: ON BEHALF OF THE CDMS COLLABORATION, . ()
Presenter: Dr LEMAN, Steven (MIT)
Session Classification: Astroparticles - Dark Matter

Track Classification: Experiment
Search for rare Standard Model processes in the MET+b-jets signature at CDF

Thursday, 17 March 2011 19:52 (6 minutes)

We present state of the art techniques to effectively reject instrumental backgrounds from searches in the MET+b-jets signature.

Primary author: Mr POTAMIANOS, Karolos (Purdue University)
Presenter: Mr POTAMIANOS, Karolos (Purdue University)
Session Classification: Young Scientists Forum 2
Track Classification: Experiment
Measurement of Charged Pion Cross Sections in Proton Carbon Interactions at 31 GeV/c with the NA61/SHINE experiment

Among other goals, the NA61/SHINE (SHINE= Sps Heavy Ion and Neutrino Experiment) aims at precise hadron production measurement for improving calculations of the neutrino flux in the T2K neutrino oscillation experiment. These measurements are performed using a 30 GeV proton beam produced at the SPS with carbon targets of different thickness, including a replica of the T2K target. Inclusive production cross sections for negatively and positively charged pions have been obtained from a set of data collected during the first NA61/SHINE run in 2007 with a 2cm graphite target (4% of the interaction length). The NA61/SHINE spectrometer and PID capabilities are shown and the results from different analysis are discussed.

Primary author: Mr MURPHY, Sebastien (University of Geneva)
Presenter: Mr MURPHY, Sebastien (University of Geneva)
Session Classification: Young Scientist Forum 3
Track Classification: Experiment
We report recent B-Physics results from the Tevatron, with special emphasis on B_s mesons. The topics covered include searches for rare flavor-changing neutral-current decays, searches for charm CP violation, CP violation in $B_0 \rightarrow J/\psi\phi$ and other B decays, and measurements of B decays and properties. The data used for the results described here are based on approximately 2.9–6.9 $fb^{-1}$ of data collected by the CDF and DØ experiments at the Fermilab Tevatron, a proton-antiproton collider operating at a center-of-mass energy of 1.96 TeV.

**Primary author:** THOM, Julia (Cornell University)

**Presenter:** THOM, Julia (Cornell University)

**Session Classification:** Flavour Physics - Lepton Flavour - Neutrinos

**Track Classification:** Experiment
The Next-to-Minimal Supersymmetric Standard Model

Tuesday, 15 March 2011 08:30 (20 minutes)

We briefly review the most important aspects of the NMSSM. We discuss the impact of the NMSSM on low-energy observables, for dark matter as well as NMSSM specific signatures at colliders. We then briefly consider some NMSSM realisations and how these can be experimentally tested.

Primary author: TEIXEIRA, Ana M. (LPC Clermont)
Presenter: TEIXEIRA, Ana M. (LPC Clermont)
Session Classification: Beyond the Standard Model
Track Classification: Theory
Dark Matter Detection with Noble Liquids

Friday, 18 March 2011 09:10 (20 minutes)

The field of dark matter direct detection has seen important contributions in recent years from experiments involving liquid noble gases, specifically liquid argon and liquid xenon. These detection media offer many properties deemed useful in this search, including fast scintillation response, charge readout, 3-D position reconstruction, and nuclear recoil discrimination. Part of the very rapid emergence and dominance of noble liquids is due to the fact that these technologies are easily scalable to nearly arbitrary size and mass. However, the physics impact of recent results has called into question our understanding of the low-energy response of these detection media, in light of apparent contradictions with a possible low-mass WIMP signal observed in the DAMA/Libra and CoGeNT experiments. I discuss recent results as they have been presented and examine the details of this inconsistency.

Primary author: Dr MANALAYSAY, Aaron (University of Zurich)
Presenter: Dr MANALAYSAY, Aaron (University of Zurich)
Session Classification: Astroparticles - Dark Matter
Track Classification: Experiment
We calculate the transition radiation process $\nu \rightarrow \nu \gamma$ at the border of two different mediums. The neutrinos are taken to be with only standard-model couplings. The medium fulfills the dual purpose of inducing an effective neutrino-photon vertex and of modifying the photon dispersion relation. We find that the probability of transition radiation is larger by three orders of magnitude (using the medium induced neutrino-photon vertex) than previous calculations (using vacuum induced vertex). The transition probability is about $10^{-18}$ for the electron density typical for neutron stars surface.

**Primary author:** Prof. IOANNISIAN, Ara (Yerevan Physics Institute)

**Presenter:** Prof. IOANNISIAN, Ara (Yerevan Physics Institute)

**Session Classification:** Neutrinos

**Track Classification:** Theory
We reconsider the possibility that Majorana masses of the three known neutrinos are generated radiatively by the presence of a fourth generation with both Dirac and Majorana masses. We find that the observed light neutrino mass hierarchy is not compatible with the usual experimental tests of the Standard Model in this minimal scenario, but all present data can be accommodated with five generations. Within this framework, we explore the parameter space regions which are currently allowed and lead to observable effects in lepton flavour and lepton number violating experiments.

**Primary author:** Mr HERRERO GARCÍA, Juan (IFIC/UV)

**Co-authors:** Mr APARICI, Alberto (IFIC/UV); Dr SANTAMARÍA, Arcadi (IFIC/UV); Dr RIUS, Nuria (IFIC/UV)

**Presenter:** Mr HERRERO GARCÍA, Juan (IFIC/UV)

**Session Classification:** Yound Scientist Forum 3

**Track Classification:** Theory
The COUPP collaboration uses bubble chambers to search for WIMP dark matter. These bubble chambers are sensitive to the ~10 keV nuclear recoils produced by WIMP scattering, but completely insensitive to the gamma and beta backgrounds that limit most dark matter direct detection experiments. Recent developments in acoustic discrimination between nuclear recoils and alpha decays have led to world-leading limits on spin-dependent WIMP-proton cross sections. In the summer of 2010 COUPP deployed a 4kg bubble chamber at SNOLAB. This chamber has already surpassed our recently published limits by a factor of ~5, and will soon be competitive with the world-leaders in spin-independent as well as spin-dependent WIMP detection.

**Primary author:** Dr DAHL, C Eric (University of Chicago)

**Presenter:** Dr DAHL, C Eric (University of Chicago)

**Session Classification:** Astroparticles - Dark Matter

**Track Classification:** Experiment
In many new physics scenarios, one expects big corrections to the $B_s \bar{B}_s$ mixing amplitude. This gives rise to a new CP-violating phase, which tends to suppress the width difference of the heavy and the light meson state, given that there is no large enhancement of the decay amplitude. I will briefly discuss corrections to the mixing- and the decay amplitude for Randall-Sundrum models with a brane-localized Higgs-sector. The implications for observables such as the width difference, the time-dependent asymmetry $S_{\psi\phi}$, and the semileptonic CP asymmetry $A_{s}^{SL}$, are investigated.

Primary author: Mr PFOH, Torsten (JGU Mainz)
Co-author: Mr GOERTZ, Florian (JGU Mainz)
Presenter: Mr PFOH, Torsten (JGU Mainz)
Session Classification: Young Scientist Forum 3
Track Classification: Theory
The Potential of Minimal Flavour Violation

Friday, 18 March 2011 19:50 (6 minutes)

Minimal Flavour Violation assumes a dynamical origin for the fermion Yukawa couplings. Using only flavour symmetry, we derive the general scalar potential for the fields whose background values are the Yukawa couplings. The minimum of the potential is analyzed and confronted with the physical masses and mixings, discussing the degree of naturalness of the ansatz.

Primary author: Mr ALONSO, Rodrigo (IFT & Dto de Física Teórica UAM, Madrid)
Co-author: Dr GAVELA, Belén (IFT & Dto de Física Teórica UAM, Madrid)
Presenter: Mr ALONSO, Rodrigo (IFT & Dto de Física Teórica UAM, Madrid)
Session Classification: Young Scientist Forum 3
Track Classification: Theory
Recent measurements of W and Z boson production properties from the Tevatron are presented.

**Primary author:** Mr VESTERINEN, Mika (University of Manchester)

**Presenter:** Mr VESTERINEN, Mika (University of Manchester)

**Session Classification:** The Standard Model and beyond

**Track Classification:** Experiment
Results from MiniBooNE and SciBooNE experiments

Saturday, 19 March 2011 10:35 (15 minutes)

This talk will describe recent neutrino oscillation and cross section results from MiniBooNE and SciBooNE experiments.

Primary author: Dr PAVLOVIC, Zarko (Los Alamos National Laboratory)
Presenter: Dr PAVLOVIC, Zarko (Los Alamos National Laboratory)
Session Classification: Neutrinos - Precision tests - Cosmology
Track Classification: Experiment
Yukawa unification in SUSY SO(10)

Thursday, 17 March 2011 19:36 (6 minutes)

In simple SO(10) SUSY GUT the top, bottom and tau Yukawa couplings unify at the GUT scale. It is well known that Yukawa unification (YU) consistent with radiative electroweak symmetry breaking requires non-universal scalar masses at the GUT scale. YU prefers also the negative sign of parameter $\mu$. However, negative $\mu$ is typically disfavoured by the measurements of the muon anomalous magnetic moment. This is the reason why most of the studies so far have been devoted to the case of positive $\mu$. These studies shows that YU is very hard to obtain in a natural way when $\mu$ is positive. We study a model in which $\mu$ is negative, as preferred by YU, but SUSY contribution to the muon anomalous magnetic moment is positive (as preferred by the experiment). The crucial feature of our model are non-universal gaugino masses which are assumed to be generated by the F-term vev in a 54-dimensional representation of SO(10). It is shown that all the phenomenological constraints on this model can be easily satisfied while keeping SUSY spectrum light enough to be detected at the LHC. Special emphasis is given to the interplay between constraints coming from $\text{BR}(b\rightarrow s\gamma)$ and the muon anomalous magnetic moment.

**Primary author:** Mr BADZIAK, Marcin (University of Warsaw)

**Presenter:** Mr BADZIAK, Marcin (University of Warsaw)

**Session Classification:** Young Scientists Forum 2

**Track Classification:** Theory
Extra-dimensional models with a fundamental Planck scale as low as the electro-weak scale offer an excellent opportunity to test the quantization of gravity at colliders. If gravity becomes asymptotically safe, its high-energy behaviour is governed by a fixed point of the renormalisation group. I discuss the asymptotic safety scenario for gravity and experimental signatures at colliders for graviton-induced Drell-Yan spectra in models with a low quantum gravity scale.
I will briefly present a study of the di-muon CP asymmetry measurement performed by the D0 collaboration. I will focus in particular on its consistency with other CP violation measurements and its possible implications for physics beyond the Standard Model.

**Primary author:** Dr PAPUCCI, Michele (CERN & LBNL)

**Presenter:** Dr PAPUCCI, Michele (CERN & LBNL)

**Session Classification:** Flavour Physics - Lepton Flavour - Neutrinos

**Track Classification:** Theory
Top-quark forward-backward asymmetry in Randall-Sundrum models

Wednesday, 16 March 2011 09:55 (15 minutes)

I discuss the anomalously large asymmetry in top-antitop-quark production within Randall-Sundrum models. Kaluza-Klein gluons generically have the potential to generate a large forward-backward asymmetry at tree level. In models with an anarchic flavour structure, however, their coupling to the light quarks inside the proton is strongly suppressed. I show that even though this suppression is lifted at one-loop level, the large asymmetry cannot be explained in a natural framework of warped extra dimensions.

Primary authors: GOERTZ, Florian (Mainz University); BAUER, Martin (Mainz University); WESTHOFF, Susanne (Mainz University); PFOH, Torsten (Mainz University); HAISCH, Ulrich (Mainz University)

Presenter: WESTHOFF, Susanne (Mainz University)

Session Classification: Flavour Physics

Track Classification: Theory
A Fourth Chiral Generation and SUSY Breaking

We revisit four generations within the context of supersymmetry. We compute the perturbativity limits for the fourth generation Yukawa couplings and show that if the masses of the fourth generation lie within reasonable limits of their present experimental lower bounds, it is possible to have perturbativity only up to scales around 1000 TeV. Such low scales are ideally suited to incorporate gauge mediated supersymmetry breaking, where the mediation scale can be as low as 10-20 TeV. The minimal messenger model, however, is highly constrained. While lack of electroweak symmetry breaking rules out a large part of the parameter space, a small region exists, where the fourth generation stau is tachyonic. General gauge mediation with its broader set of boundary conditions is better suited to accommodate the fourth generation.

Primary authors:  Dr. WINGERTER, Akin (LPSC); Prof. GODBOLE, Rohini (IISc Bangalore, India); Prof. VEMPATI, Sudhir (IISc Bangalore, India)

Presenter:  Dr. WINGERTER, Akin (LPSC)

Session Classification:  Beyond the Standard Model

Track Classification:  Theory
SUSY flavour problem in 5D GUTs

Thursday, 17 March 2011 20:08 (6 minutes)

In 5D SUSY GUTs, wave-function localization permits to reproduce flavour hierarchy. As this mechanism also acts on SUSY breaking parameters, it can potentially solve the SUSY flavour problem.

Here we carry out a quantitative analysis of the case of Holographic Grand Unification, which is a warped SU(6) GUT with pNGB Higgses on the IR brane. To break SUSY, we use independently radion mediation and a brane source. The proliferation of O(1) coefficients makes an extensive numerical analysis necessary to explore the parameter space and obtain realistic scenarios which comply with experimental constraints. In this talk, we focus on the brane source scenario and the consequences for phenomenology.

Primary author: Mr FICHET, sylvain (LPSC)
Presenter: Mr FICHET, sylvain (LPSC)
Session Classification: Young Scientists Forum 2
Track Classification: Theory
A number of EW precision tests of the SM depend on non-perturbative QCD-input which can be predicted model-independently by Lattice QCD.

After briefly introducing basic concepts I will present the status of the field. Recent efforts that are aimed at facilitating access to lattice results for the non-specialist will be reviewed. Time permitting, very interesting recent developments will be presented.

Primary author: Dr JUETTNER, Andreas (CERN)
Presenter: Dr JUETTNER, Andreas (CERN)
Session Classification: Flavour Physics and Leptogenesis
Track Classification: Theory
The Supersymmetric Higgs bounds at the Tevatron and LHC

*Tuesday, 15 March 2011 19:15 (6 minutes)*

MSSM Higgs bosons are the most promising way to discover Higgs physics at hadronic colliders since their cross section is enhanced compared to that of the Standard Model. In this talk I will present SUSY Higgs bounds on the \([\tan \beta ; MA]\) plane in light of the uncertainties affecting the theoretical predictions at the Tevatron and the LHC.

**Primary author:** Mr BAGLIO, Julien (Laboratoire de physique théorique d’Orsay)

**Presenter:** Mr BAGLIO, Julien (Laboratoire de physique théorique d’Orsay)

**Session Classification:** Young Scientists Forum 1

**Track Classification:** Theory
Recent results of the OPERA experiment

Saturday, 19 March 2011 17:00 (15 minutes)

OPERA is a long baseline hybrid experiment located in the Gran Sasso underground laboratory designed to study the nu_mu -> nu_tau neutrino oscillations. OPERA is the first experiment searching for nu_tau appearance from a pure high energy nu_mu beam (CNGS) produced at CERN and travelling a distance of 730 km to the OPERA detector. Tau leptons produced in charged current interactions are identified from their decay topology using the technique of nuclear emulsions. After a brief introduction on the physics motivation, on the OPERA hybrid electronic-emulsion detector and the description of the principle of tau detection, the recent results are presented including a description of the first candidate nu_tau event.

Primary author: Dr POZZATO, Michele (Bologna University - INFN)
Presenter: Dr POZZATO, Michele (Bologna University - INFN)
Session Classification: Neutrinos
Track Classification: Experiment
Recent results from the Pierre Auger Observatory

Thursday, 17 March 2011 18:20 (15 minutes)

The Pierre Auger Observatory is measuring the ultra-high energy cosmic ray extended air showers with unprecedented sensitivity. Recent results will be reported, including measurements of the spectrum and anisotropies studies at the highest energies. These results will be discussed together with the latest composition estimations from the measurement of the depth of shower maximum by the fluorescence detector.

Primary author: Mrs LHENRY-YVON, Isabelle (IPN Orsay)

Presenter: Mrs LHENRY-YVON, Isabelle (IPN Orsay)

Session Classification: Neutrinos to Astroparticles

Track Classification: Experiment
Higgs Physics in Warped Extra Dimensions

*Thursday, 17 March 2011 19:20 (6 minutes)*

Warped Extra Dimensions provide an elegant solution to both the gauge hierarchy problem and the flavor puzzle of the Standard Model of Particle Physics. The hierarchies between the electroweak and the Planck scale as well as those within the flavor sector are addressed in a five-dimensional setup with non-factorizable geometry.

As the Higgs boson has to reside close to the TeV boundary, it has a large overlap with the Kaluza-Klein excitations present in the theory. This results in interesting effects in Higgs-boson observables which will be the subject of this talk.

**Primary author:** Mr GOERTZ, Florian (Johannes Gutenberg-Universität Mainz)

**Presenter:** Mr GOERTZ, Florian (Johannes Gutenberg-Universität Mainz)

**Session Classification:** Young Scientists Forum 2

**Track Classification:** Theory
**Z’ bosons and friends**

*Tuesday, 15 March 2011 09:20 (15 minutes)*

I will explain how SU(3)xSU(2)xU(1) gauge invariance can be used to classify all possible extra vector bosons in arbitrary extensions of the Standard Model. The full symmetry also restricts their interactions significantly, and leads to a model independent parametrization. I will then present updated/new limits on the couplings and masses of the new vector particles, arising from global fits to electroweak precision data. I will also discuss the interplay with Higgs physics and the possibility of relaxing the limits when several extra particles are included in the analysis. Finally, I will comment on LHC searches.

**Primary author:** Dr PEREZ-VICTORIA, Manuel (University of Granada)

**Co-authors:** Prof. DEL AGUILA, Francisco (University of Granada); Dr DE BLAS, Jorge (University of Notre Dame)

**Presenter:** Dr PEREZ-VICTORIA, Manuel (University of Granada)

**Session Classification:** Beyond the Standard Model

**Track Classification:** Theory
Higgs Boson Searches with ATLAS based on the 2010 Data

Monday, 14 March 2011 10:00 (15 minutes)

The first searches for Higgs bosons in the Standard Model and its extensions with the ATLAS detector are discussed. The findings are based on the 2010 LHC pp-collision data taken at a center-of-mass energy of 7 TeV. An overview of the results and their interpretation will be given.

Primary author:  Prof. SCHUMACHER, Markus (Albert-Ludwigs-Universität Freiburg)
Presenter:  Prof. SCHUMACHER, Markus (Albert-Ludwigs-Universität Freiburg)
Session Classification:  Brout-Englert-Higgs boson Searches (TeVatron and LHC)
Track Classification:  Experiment
Diboson physics at the Tevatron

Monday, 14 March 2011 18:50 (15 minutes)

Measurements involving pairs of electroweak gauge bosons (dibosons) are important tests of the Standard Model. The D0 and CDF experiments at the Tevatron have measured diboson cross sections in several different decay modes and have set limits on triple gauge couplings with these results. Diboson measurements also present an important benchmark in the search for the Higgs boson. I will present recent diboson results from the Tevatron, including results in topologies relevant for the Higgs searches.

Primary author: HURWITZ, Martina (Lawrence Berkeley National Lab)
Presenter: HURWITZ, Martina (Lawrence Berkeley National Lab)
Session Classification: The Standard Model and beyond
Track Classification: Experiment
We present the results of searches for the Standard Model Higgs boson decaying predominantly to $W^+W^-$ and ZZ pairs, at a center-of-mass energy of $\sqrt{s} = 1.96$ TeV, using up to 8.1 fb$^{-1}$ of data collected with the CDF and D0 detectors at the Fermilab Tevatron collider. The improvements of the analysis techniques and inclusion of additional channels are discussed. The combination of these channels results in significantly improved sensitivity across the 130-200 GeV mass range.

**Primary author:** Dr PETRIDIS, Konstantinos Alexandros (The University of Manchester)

**Presenter:** Dr PETRIDIS, Konstantinos Alexandros (The University of Manchester)

**Session Classification:** Brout-Englert-Higgs boson Searches (TeVatron and LHC)
Entangled Neutrino Oscillations

Due to energy-momentum conservation, a neutrino produced in pion decay is kinematically entangled with the recoiling muon. We derive the probability for neutrino oscillation taking this entanglement fully into account. We make clear that this probability is — and must be — identical to that obtained when the entanglement is ignored.

Primary author: Dr KAYSER, Boris (Fermilab)
Presenter: Dr KAYSER, Boris (Fermilab)
Pheno analysis of $b \rightarrow s \mu^+ \mu^-$ decays in 2011 plus

*Thursday, 17 March 2011 08:30 (15 minutes)*

We present today's and future opportunities of $b \rightarrow s \mu^+ \mu^-$ decays for testing the Standard Model and explore its borders.

**Primary author:** Prof. HILLER, Gudrun (Dortmund)

**Presenter:** Prof. HILLER, Gudrun (Dortmund)

**Session Classification:** Flavour Physics and Leptogenesis

**Track Classification:** Theory
We review Lepton Flavour Violation (LFV) in the supersymmetric version of the seesaw mechanism (type I, II and III) and in Left-Right (LR)models. The LFV needed for explaining the neutrino masses and mixings acts as the only source of LFV and has experimental implications both in low-energy experiments (like MEG) where we search for the radiative decays of leptons, and at the LHC where we look at its imprint on the LFV decays of the sleptons and on slepton mass splittings. The study of the di-lepton invariant mass distribution at the LHC allows to reconstruct some of the masses of the different sparticles involved in a decay chain. Slepton mass splittings can be either interpreted as a signal of non-universality in the SUSY soft breaking-terms (signalling a deviation from constrained scenarios as the cMSSM) or as being due to the violation of lepton flavour. We discuss how the confrontation of slepton mass splittings as observed at the LHC and low-energy LFV observables may provide important information about the underlying mechanism of LFV.
Prospects and Status of SuperKEKB/BelleII

Thursday, 17 March 2011 08:50 (15 minutes)

The status and prospects of the SuperKEKB $e^+e^-$ collider and the BelleII detector are presented. Several examples of physics measurement to be performed with the BelleII at SuperKEKB are discussed.

Primary author: Prof. DANILOV, Mikhail (ITEP)
Presenter: Prof. DANILOV, Mikhail (ITEP)
Session Classification: Flavour Physics and Leptogenesis
The production of pairs of oppositely-charged tau leptons at 7 TeV center-of-mass energy is studied with 36/mb of proton-proton collision data collected by the CMS experiment in 2010. Events are selected in a combination of different final states resulting from hadronic and leptonic tau decays. The Z to tau tau cross section is measured. The tau pair kinematics is fully reconstructed using a likelihood technique. The mass spectrum observed in data is used to derive upper bounds on the production cross section times branching ratio to tau pairs as a function of the Higgs boson mass in the Minimal Supersymmetric extension of the Standard Model (MSSM).

**Primary author:** Dr VEELKEN, Christian (University of California, Davis)

**Presenter:** Dr VEELKEN, Christian (University of California, Davis)

**Session Classification:** Brout-Englert-Higgs boson Searches (TeVatron and LHC)

**Track Classification:** Experiment
What if the LHC does not find Supersymmetry by the end of 2011/2012?

Tuesday, 15 March 2011 18:10 (20 minutes)

The ATLAS and CMS experiments have started their quest for Supersymmetry (SUSY). We employ a global fit, using the code Fittino, to existing precision measurements sensitive to SUSY and combine it with the expected exclusion potential of the LHC experiments in the 2011/2012 run assuming between 35pb-1 and 7fb-1 of data. This potential is estimated through realistic procedure using fast detector simulation and builds on the experience of the 2010 LHC run and includes state-of-the-art higher order corrections for the signal cross sections. In the case of non-discovery we investigate the properties of the remaining parameter space. We evaluate the mass spectrum of then-possible SUSY parameter points preferred by precision data and dark matter constraints.

Primary author: BECHTLE, Philip (DESY)
Co-authors: O’LEARY, Ben (Universitaet Wuerzburg); SARRAZIN, Bjoern (DESY); ROBENS, Carsten (Technische Hochschule Aachen); DREINER, Herbert (Universitaet Bonn); DESCH, Klaus (Universitaet Bonn); KRAEMER, Michael (Technische Hochschule Aachen); WIENEMANN, Peter (Universitaet Bonn)
Presenter: BECHTLE, Philip (DESY)
Session Classification: Beyond the Standard Model
Track Classification: Experiment
Observation of $Z \rightarrow \tau \tau$ Decays with the ATLAS detector

A study of $Z \rightarrow \tau \tau$ decays has been performed with the ATLAS experiment at the LHC. The channel with one tau lepton decaying into an electron or muon and the second one into hadrons has been analyzed. The study is based on a data sample corresponding to an integrated luminosity of 8.3 pb$^{-1}$ for the electron channel and 8.5 pb$^{-1}$ for the muon channel, at a proton-proton centre-of-mass energy of 7 TeV. In the muon channel a total of 51 data events is selected, with an overall estimated background of $9.9 \pm 2.1$ events. In the electron channel a total of 29 data events is selected, with an estimated background of $11.8 \pm 1.7$ events. The observed number of events in data is compatible with the Standard Model expectation. This is the first observation of $Z \rightarrow \tau \tau$ decays in ATLAS.

Primary author: Ms LARNER, Aimee (University of Oxford)
Presenter: Ms LARNER, Aimee (University of Oxford)
Session Classification: Young Scientists Forum 1
Analysis of $Z \to l^+l^-$ Polarization at CMS

Tuesday, 15 March 2011 19:55 (6 minutes)

With approximately 35/pb of LHC proton-proton collision data collected by CMS we study the Drell-Yan process $qqbar \rightarrow Z \rightarrow l^+l^-$. Differential cross sections with respect to the invariant mass, rapidity, and transverse momentum are presented. The forward-backward asymmetry is measured as a function of the di-lepton invariant mass, and an analysis of the fully differential distribution leads to the measurement of the Weinberg weak-mixing angle.

Primary author: Mr TRAN, Nhan (Johns Hopkins University)
Presenter: Mr TRAN, Nhan (Johns Hopkins University)
Session Classification: Young Scientists Forum 1
Track Classification: Experiment
Combination of Standard Model Higgs Boson searches at the Tevatron

Monday, 14 March 2011 11:00 (10 minutes)

We present a new combination of searches for a standard model Higgs Boson by the CDF and D0 experiments at the Fermilab Tevatron. This combination, covering possible Higgs boson masses between 130 GeV/c^2 and 200 GeV/c^2 and emphasizing the H->WW and H->ZZ decay channels, utilizes 7.1/fb of data collected at CDF and 8.1/fb of data collected at D0. We present 95% CL upper limits on standard model Higgs boson production in this mass range.

Primary author: Dr JAYATILAKA, Bodhitha (Duke University)
Presenter: Dr JAYATILAKA, Bodhitha (Duke University)
Session Classification: Brout-Englert-Higgs boson Searches (TeVatron and LHC)
Track Classification: Experiment
Quarks and leptons, the fundamental building blocks of matter, are grouped into three “generations”, that is three sets of particles with identical interactions but hierarchically different masses. The mysterious nature of the charged fermion mass matrix has not been clarified by the evidence for neutrino masses, quite to the contrary: distinctly different patterns emerge for the quark and the lepton sector, where the minute neutrino masses are associated with very large mixing, in opposition to the nearly diagonal and hierarchical Cabibbo-Kobayashi-Maskawa matrix. We have previously suggested a way to derive the fermion mass matrix in the frameworks of a model with two extra space dimensions, where a single fundamental generation gives rise to three generations in the three-dimensional world. Three-dimensional fermions appear as zero modes trapped in the core of a topological defect, and the hierarchy of masses and mixings is produced by wave function overlaps in extra dimensions. A generation number corresponds to the projection of the angular momentum and so, it has geometrical nature.

In this talk we show that, putting all building blocks together, we get a successful explanation of very different hierarchical patterns of masses and mixings of both charged fermions and neutrino by means of one and the same mechanism operating in a realistic model. We present a fit of all known parameters of the mass matrices through a smaller number of free parameters of the model and give falsifiable predictions for future experiments.

**Primary author:** Dr LIBANOV, Maxim (Institute for Nuclear Research of RAS)

**Presenter:** Dr LIBANOV, Maxim (Institute for Nuclear Research of RAS)

**Session Classification:** Neutrinos - Precision tests - Cosmology

**Track Classification:** Theory
Study of W+gamma events at the CMS with 7 TeV LHC data

Tuesday, 15 March 2011 19:47 (6 minutes)

The measurement of the inclusive cross section for W+gamma production is presented based on 36 pb⁻¹ of data acquired with the CMS detector from 7 TeV LHC collisions in 2010. Comparisons are made with the predictions of the standard model. The W bosons are identified through their leptonic decays to electrons and muons. The W+gamma cross section is sensitive to anomalous triple-gauge couplings and hence this measurement probes physics beyond the standard model.

Primary author: Mr MAJUMDER, Devdatta (TIFR, Mumbai)
Presenter: Mr MAJUMDER, Devdatta (TIFR, Mumbai)
Session Classification: Young Scientists Forum 1
Track Classification: Experiment
Charmless two-dody B hadron decays at LHCb with 2010 data

Thursday, 17 March 2011 20:16 (6 minutes)

The LHCb experiment is designed to perform flavour physics measurements at the Large Hadron Collider. Using data collected during the 2010 run, we reconstructed a sample of $H_b \rightarrow h + h'$ decays, where $H_b$ can be either a $B_0$ meson, a $B_{s0}$ meson or a $\Lambda_{b}$ baryon, while $h$ and $h'$ stand for $\pi$, $K$ or $p$. Such decays are sensitive probes of the Cabibbo-Kobayashi-Maskawa matrix and have the potential to reveal the presence of New Physics. We present preliminary measurements of the direct CP asymmetries in the $B_0 \rightarrow K^+ \pi^-$ and $B_{s0} \rightarrow \pi^+ K^-$ decays.

**Primary author:** Mr PERAZZINI, Stefano (Università & INFN Bologna)

**Presenter:** Mr PERAZZINI, Stefano (Università & INFN Bologna)

**Session Classification:** Young Scientists Forum 2

**Track Classification:** Experiment


Estimation of SM backgrounds to SUSY search in the
1-lepton+jets+ETMiss channel

Thursday, 17 March 2011 19:28 (6 minutes)

First results of the SUSY search in the 1-lepton+jets+ETMiss channel with the ATLAS experiment were made public recently. A precise understanding of the Standard Model backgrounds was crucial for these results. This talk will give a short overview about the Standard Model background estimation techniques and results.

Primary author:  Mrs LORENZ, Jeanette (Fakultaet fuer Physik, LMU Muenchen)
Presenter:  Mrs LORENZ, Jeanette (Fakultaet fuer Physik, LMU Muenchen)
Session Classification:  Young Scientists Forum 2
Track Classification:  Experiment
Standard Model measurements

Monday, 14 March 2011 17:30 (15 minutes)

We present several measurements in the domain of electroweak and top physics in proton-proton collisions at the LHC at a centre-of-mass energy of 7 TeV. We use data collected with the CMS experiment during the year 2010, and amounting to a total integrated luminosity of 36 pb⁻¹. Measurements include total cross-section productions, asymmetries, top mass measurements and focus on final states with the presence of charged leptons. The results are compared with theory predictions.

Primary author: Mr HARRIS, Philip (MIT)
Presenter: Mr HARRIS, Philip (MIT)
Session Classification: The Standard Model and beyond
Track Classification: Experiment
Search for new physics in Rare B decays at LHCb

Thursday, 17 March 2011 11:00 (15 minutes)

A search for the decays Bs→mumu and B0→ mumu is performed with about 37 pb-1 of pp collisions at s=7 TeV collected by the LHCb experiment at the Large Hadron Collider at CERN. The observed numbers of events are consistent with the background expectations. The resulting upper limits on the branching ratios are B(Bs→mumu) < 43(56) x 10^-9 and B(B0 →mumu) < 12(15) x 10^-9 at 90(95)% confidence level.

Primary author: Dr MARTINEZ SANTOS, diego (cern)
Presenter: Dr MARTINEZ SANTOS, diego (cern)
Session Classification: Flavour Physics and Leptogenesis
Track Classification: Experiment
Latest results of the Edelweiss-II experiment

Friday, 18 March 2011 09:55 (15 minutes)

The EDELWEISS-II collaboration has performed a direct search for WIMP dark matter with an array of ten 400 g heat-and-ionization cryogenic detectors equipped with interleaved electrodes for the rejection of near-surface events. Results from eleven months of continuous operation at the Laboratoire Souterrain de Modane will be shown and their interpretation in terms of limits on the cross-section of spin-independent elastic and inelastic interactions of WIMPs and nucleons will be presented. The result obtained demonstrates the excellent background rejection capabilities of these simple and robust detectors in an actual WIMP search experiment. Some first results with 800 g detectors will be also presented together with the prospects for this experiment and the ton scale EURECA project.

Primary author: Dr TORRENTO, Ana (CEA - Saclay)
Presenter: Dr TORRENTO, Ana (CEA - Saclay)
Session Classification: Astroparticles - Dark Matter
Track Classification: Experiment
Measurement of the W Lepton Charge Asymmetry in CMS at sqrt(s)=7 TeV

Tuesday, 15 March 2011 19:39 (6 minutes)

We present a measurement of the lepton charge asymmetry in pp->W->lnu decays at sqrt(s)=7 TeV with the CMS detector at the LHC. Results are presented corresponding to 36 pb^{-1} of integrated luminosity for both the electron and muon channels in 6 bins of lepton pseudorapidity up to |eta|=2.4 and |eta|=2.1 respectively. The measurements are compared with theoretical predictions and the results are expected to provide additional constraints on the parton distribution functions of the proton.

Primary author:  Mr BENDAVID, Josh (Massachusetts Institute of Technology)
Presenter:  Mr BENDAVID, Josh (Massachusetts Institute of Technology)
Session Classification:  Young Scientists Forum 1
Track Classification:  Experiment
Search for Low Mass Higgs Boson at the Tevatron

Monday, 14 March 2011 09:20 (15 minutes)

We present the current status of searches for a low mass (below 135 GeV/c^2) SM Higgs boson using data collected at the Fermilab Tevatron collider in proton-antiproton collisions at the center of mass energy 1.96 TeV. We focus in particular on ongoing efforts to improve overall search sensitivity through improvements to our analysis methods and techniques. We project that these improvements will provide sensitivity to a potential Higgs signal across the entire allowed mass range below 185 GeV/c^2.

Primary author: Mr TOTARO, Pierluigi (INFN Sezione di Padova)
Presenter: Mr TOTARO, Pierluigi (INFN Sezione di Padova)
Session Classification: Brout-Englert-Higgs boson Searches (TeVatron and LHC)
Track Classification: Experiment
Search for Higgs boson production in the dilepton and missing transverse energy final state with the DZero detector at \( \sqrt{s} = 1.96 \) TeV

*Tuesday, 15 March 2011 19:31 (6 minutes)*

We present a search for the standard model (SM) Higgs boson optimized in the decay channel \( H \rightarrow W^+W^- \), where both W bosons decay leptonically. The final state considered contains dileptons \((ee, \mu\mu, e\mu)\) and large missing transverse energy from the neutrinos. A multivariate analysis is used to suppress the background. No significant excess above the SM background has been observed and limits on the Higgs boson production cross section times the SM branching ratio for \( m_H = 115 - 200 \) GeV are computed. Recent improvements in this search channel will be presented.

**Primary author:** Mrs NAYYAR, Ruchika (Phd Student)

**Presenter:** Mrs NAYYAR, Ruchika (Phd Student)

**Session Classification:** Young Scientists Forum 1

**Track Classification:** Experiment
Neutralino dark matter with a light Higgs

Friday, 18 March 2011 08:50 (15 minutes)

We shall examine the dark matter phenomenology in supersymmetric light higgs boson scenarios, starting from a MSSM variant with non-universal Higgs masses at the GUT-scale. The correct relic density is obtained mostly through the annihilation into a pseudoscalar A. We shall see that most part of the A pole region can produce significant gamma-ray and antiproton signals and comment on the different relevant behaviors of various viable parameter space regions. Furthermore, we shall confront the model with constraints coming from direct detection experiments and comment on the results, focusing on uncertainties in dark matter - related computations.

Primary author: Mr GOULELIS, ANDREAS (DESY - Hamburg)
Presenter: Mr GOULELIS, ANDREAS (DESY - Hamburg)
Session Classification: Astroparticles - Dark Matter
Track Classification: Theory
Rare B and D Decays at BaBar

Wednesday, 16 March 2011 10:55 (25 minutes)

We present recent results on rare B and D decays from the Babar experiment. The focus will be on measurements that are sensitive to the presence of New Physics. Several flavour-changing-neutral-current channels have been investigated: we present results on the CP asymmetry in $b \rightarrow s \gamma$, searches for $B \rightarrow K \nu \bar{\nu}$, $B \rightarrow K \tau \tau$ and $B_0/D_0 \rightarrow \gamma \gamma$, as well as the branching fraction for $B \rightarrow \tau \nu$.

Primary author: Dr WALSH, John (INFN, Pisa)
Presenter: Dr WALSH, John (INFN, Pisa)
Session Classification: Flavour Physics
Track Classification: Experiment
Search for B-modes in CMB polarization - QUIET and other experiments

Saturday, 19 March 2011 09:35 (15 minutes)

B-modes in cosmic microwave background (CMB) polarization is smoking gun signature of inflationary universe. Inflationary universe predicts primordial gravitational waves, the primordial gravitational waves created degree-scale odd-parity components in CMB polarization pattern: B-modes. Therefore, the primary goal of CMB polarization studies in the next decade is detection of B-modes.

Many experiments are aiming to observe B-modes. It is very exciting period. I will review experimental approach with mainly focusing on QUIET experiment. Limits to date and future prospects will be also discussed from the experimental view points.

Primary author: TAJIMA, Osamu (KEK)
Presenter: TAJIMA, Osamu (KEK)
Session Classification: Neutrinos - Precision tests - Cosmology
Track Classification: Experiment
The Higgs production rates at Tevatron and at the LHC

Monday, 14 March 2011 08:50 (25 minutes)

The accuracy of theoretical predictions for the production of the Higgs boson at hadron colliders is an important topical issue. Inclusive Higgs production originates from simple processes, very similar kinematically to Drell-Yan production which is a flagship of precision physics at hadron colliders. However, the predominantly gluonic initial state, the non-classical coupling of the Higgs boson to gluons, stronger electroweak effects, and the yet undetermined structure of the Higgs interactions due to possible physics beyond the Standard Model, complicate the estimation of Higgs production rates. I will review the theoretical status of Higgs cross-sections and assess their precision at the Tevatron and the LHC.

Primary authors: LAZOPOULOS, Achilleas (ETH Zurich); ANASTASIOU, Charalampos (ETH Zurich)

Presenter: ANASTASIOU, Charalampos (ETH Zurich)

Session Classification: Brout-Englert-Higgs boson Searches (TeVatron and LHC)

Track Classification: Theory
Beyond the Standard Model Higgs Searches at the Tevatron

Monday, 14 March 2011 19:55 (15 minutes)

The CDF and D0 Collaborations at the Tevatron have an extensive programme of searches for "Beyond the Standard Model" Higgs bosons. Recent searches will be presented, covering the Minimal Supersymmetric Standard Model (MSSM), Next-to-MSSM, Hidden Valley and Fermiphobic Higgs sectors, using data sets corresponding to integrated luminosities of up to 8.2 invfb.

Primary author:  Dr SCANLON, Tim (Imperial College London)

Presenter:  Dr SCANLON, Tim (Imperial College London)

Session Classification:  The Standard Model and beyond

Track Classification:  Experiment
Supernovae Ia and Dark Energy: results from the first 3 years of the Supernova Legacy Survey

Saturday, 19 March 2011 09:15 (15 minutes)

We present the recent results from the analysis of the Supernova Legacy Survey 3-years data sample.

For the dark energy equation of state, assuming a flat universe, we measure a $w$ parameter consistent with a cosmological constant with a precision of 0.2. We have paid particular attention to the systematic uncertainties.

We combine the SNe data with baryon acoustic oscillation measurements from the Sloan Digital Sky Survey (SDSS) and measurements of the cosmic microwave background power spectrum from the WMAP-7 year data, to obtain, under the flat universe hypothesis, a measurement of the dark energy equation of state $w = -1.068$ with a precision of 0.08.

Primary author: Mrs HARDIN, Delphine (Pierre & Marie Curie University, Paris)

Presenter: Mrs HARDIN, Delphine (Pierre & Marie Curie University, Paris)

Session Classification: Neutrinos - Precision tests - Cosmology

Track Classification: Experiment
The proton size, current status and perspectives

Saturday, 19 March 2011 09:55 (15 minutes)

We have obtained a very accurate proton charge distribution radius by measuring the Lamb shift in the 2s level of muonic hydrogen[1]. The value we found, while roughly 10 times more accurate than the one derived from either hydrogen spectroscopy or electron-proton elastic scattering, is 5 standard deviations away. I will show the results of the experiment, the latest theoretical evaluations and discuss the implications of such a large disagreement.


Primary author: Prof. INDELICATO, Paul (CNRS)
Presenter: Prof. INDELICATO, Paul (CNRS)
Session Classification: Neutrinos - Precision tests - Cosmology
Track Classification: Experiment
Top-quark pair cross-section measurement in the lepton+jets channel

Thursday, 17 March 2011 20:00 (6 minutes)

A measurement of the production cross-section for top quark pairs in pp collisions at $\sqrt{s} = 7$ TeV is presented using data recorded with the ATLAS detector. Events are selected in the lepton+jets topology by requiring a single lepton (electron or muon), large missing transverse energy and at least three jets. No explicit identification of secondary vertices inside jets (b-tagging) is performed. A simple multivariate method using three kinematic variables is employed to extract the cross-section measurement.

Primary author:  Mr PINAMONTI, Michele (INFN Udine & University of Trieste)

Presenter:  Mr PINAMONTI, Michele (INFN Udine & University of Trieste)

Session Classification:  Young Scientists Forum 2

Track Classification:  Experiment
Status of the LHC machine

Monday, 14 March 2011 08:30 (15 minutes)

Primary author: Dr PONCE, Laurette (CERN)
Presenter: Dr PONCE, Laurette (CERN)
Session Classification: Brout-Englert-Higgs boson Searches (TeVatron and LHC)
Track Classification: Experiment
Alternatives to SM: a review

Monday, 14 March 2011 11:15 (25 minutes)

Primary author: GROJEAN, Christophe (CERN)
Presenter: GROJEAN, Christophe (CERN)
Session Classification: Brout-Englert-Higgs boson Searches (TeVatron and LHC)
Track Classification: Theory
Experimental prospects for the Higgs Search

Monday, 14 March 2011 17:00 (25 minutes)

Primary author: SHARMA, Vivek (University Of California - San Diego La Jolla USA)
Presenter: SHARMA, Vivek (University Of California - San Diego La Jolla USA)
Session Classification: The Standard Model and beyond
Track Classification: Experiment
SUSY searches at CMS

Tuesday, 15 March 2011 08:55 (20 minutes)

Primary author: BERNET, Colin (CERN Geneva Switzerland)
Presenter: BERNET, Colin (CERN Geneva Switzerland)
Session Classification: Beyond the Standard Model
Track Classification: Experiment
Constraints from ew measurements to BSM theories

Tuesday, 15 March 2011 11:05 (15 minutes)

Primary author: BAAK, Max (CERN Geneva Switzerland)
Presenter: BAAK, Max (CERN Geneva Switzerland)
Session Classification: Beyond the Standard Model
Track Classification: Theory
Top production at TeVatron (ttbar and single top)

Wednesday, 16 March 2011 08:55 (15 minutes)

Primary author: LI, Liang (Fermilab Batavia USA)
Presenter: LI, Liang (Fermilab Batavia USA)
Session Classification: Flavour Physics
Track Classification: Experiment
Top properties from TeVatron

Wednesday, 16 March 2011 09:35 (15 minutes)

Presenter:  Dr MARGAROLI, Fabrizio (Purdue University)
Session Classification:  Flavour Physics
Flavour in Randall-Sundrum models

Wednesday, 16 March 2011 10:35 (15 minutes)

Primary author:  WEILER, Andreas (CERN Geneva Switzerland)
Presenter:  WEILER, Andreas (CERN Geneva Switzerland)
Session Classification:  Flavour Physics
Track Classification:  Theory
Recent Results on EW physics from Belle

Wednesday, 16 March 2011 18:40 (25 minutes)

**Primary author:** POLUEKTOV, Anton (Budker Institute of Nuclear Physics Novosibirsk Russia)

**Presenter:** POLUEKTOV, Anton (Budker Institute of Nuclear Physics Novosibirsk Russia)

**Session Classification:** Flavour Physics - Lepton Flavour - Neutrinos

**Track Classification:** Experiment
Demise of the CKM paradigm and its aftermath

Thursday, 17 March 2011 09:10 (20 minutes)

Primary author: SONI, amarjit (BNL)
Presenter: SONI, amarjit (BNL)
Session Classification: Flavour Physics and Leptogenesis
Track Classification: Theory
Recent results of CKM physics; quark masses .. From RBC/UKQCD

Thursday, 17 March 2011 10:40 (15 minutes)

Primary author: IZUBUCHI, Taku (Brookhaven National Laboratory Upton, NY USA)
Presenter: IZUBUCHI, Taku (Brookhaven National Laboratory Upton, NY USA)
Session Classification: Flavour Physics and Leptogenesis
Track Classification: Experiment
Jet Production cross section measurement with ATLAS

Thursday, 17 March 2011 19:44 (6 minutes)

Primary author: BAKER, Sarah (University College London UK)
Presenter: BAKER, Sarah (University College London UK)
Session Classification: Young Scientists Forum 2
Track Classification: Experiment
Higgs Boson Masses in the MSSM with Heavy Majorana Neutrinos

Friday, 18 March 2011 19:18 (6 minutes)

Primary author: RODRIGUEZ SANCHEZ, Ana Maria (UAM Cantoblanco Spain)
Presenter: RODRIGUEZ SANCHEZ, Ana Maria (UAM Cantoblanco Spain)
Session Classification: Young Scientist Forum 3
Track Classification: Theory
About the proton charge radius

Saturday, 19 March 2011 10:55 (15 minutes)

Primary author: DE RUJULA, Alvaro (CERN)
Presenter: DE RUJULA, Alvaro (CERN)
Session Classification: Neutrinos - Precision tests - Cosmology
Summary (experiments)

Sunday, 20 March 2011 09:50 (45 minutes)

Primary author: ROSER, Robert (Fermilab Batavia USA)
Session Classification: Conference Summaries
W→tau nun observation and data-driven estimation of the QCD background

Tuesday, 15 March 2011 20:11 (6 minutes)

Primary author: Mr MOHAMMADI, abdollah (IPM and Shiraz University)
Presenter: Mr MOHAMMADI, abdollah (IPM and Shiraz University)
Session Classification: Young Scientists Forum 1