Spaatind 2012 - Nordic Conference on Particle Physics

Report of Contributions

https://indico.nbi.ku.dk/e/380

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

Chiral symmetry at high energies

I will present two new applications of effective field theory.
The first one is the predictions of chiral logarithms for processes at high energy with socalled hard pion Chiral perturbation theory. This allows e.g. to make predictions for the light quark mass dependence of semileptonic form-factors in heavy quark decays also away from the endpoint [arXiv:0906.0302, 1006.1197, 1011.6531, 1109.5033]
The second application is an extension of chiral perturbation theory methods to effective field theories with a different pattern of global symmetry breaking. These results are expected to be useful for lattice studies of technicolour related theories. [arXiv:0910.5424, 1102.0172, 1111.1886]

Primary author: Prof. BIJNENS, Bijnens (Lund University)

Presenter: Prof. BIJNENS, Bijnens (Lund University)

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

Total Cross Section Measurement with TOTEM at the LHC

The TOTal Elastic and diffractive cross section Measurement (TOTEM) experiment [1] at the Large Hadron Collider (LHC) is an experiment specialized in forward physics. The main goals include a precise measurement of the total proton-proton cross section as well as cross sections for elastic and different inelastic processes (single, double and central diffractive). In addition to the cross section, the topologies (e.g. charged multiplicity and invariant mass distributions) of single, double and central diffraction are studied. These measurements will lead to a better understanding of the nature of the proton structure.

A first measurement of the elastic and total p-p cross sections has been done [2] by TOTEM. This is a luminosity dependent measurement using the measurement supplied by the Compact Muon Solenoid (CMS) experiment [3]. The cross section is obtained from the elastic cross section extrapolated to zero momentum transfer. The first measured cross section of (98.3 ± 0.2stat ± 2.8syst) mb at the center of mass energy of 7 TeV is in good agreement with the extrapolation from the overall fit of previously measured proton-proton and proton-antiproton cross sections at much lower energies.

A next measurement of the total and partial cross sections, with data taken on special optics conditions that are essentially free from pileup and allow detection of all protons with momentum transfer $t \geq 0.01$ GeV^2, is foreseen. The inelastic rate will be measured using the T1 and T2 detectors as event counters. Due to the limited acceptance of the detectors (geometrical acceptance in pseudorapidity η is for T1 $3.0 < \eta < 4.6$ and for T2 $5.3 < \eta < 6.5$), the inelastic rate needs to be corrected for geometrical acceptance and this is done by extrapolating the diffractive mass distribution to low mass. The measured inelastic rate together with the elastic rate and the extrapolation of the differential elastic rate to zero momentum transfer allows for a cross section measurement, based on the optical theorem, which is luminosity independent.

The inelastic rate is estimated from the number of collected inelastic events correcting for trigger, reconstruction and acceptance inefficiencies. The beam gas background is evaluated from events collected with non-colliding bunches. The reconstructed diffractive mass distribution is extrapolated to zero to estimate the rate of events with all final state particles beyond the η-acceptance of T2. Event classification is used to minimize the background of non-diffractive events for the diffractive mass reconstruction.

The goal for the luminosity independent total p-p cross section measurement is a precision of 1-2 %.

[1] http://totem.web.cern.ch/Totem/
[2] G. Antchev et al.: "First measurement of the total proton-proton cross-section at the LHC energy of $\sqrt{s}$ = 7 TeV"EPL, 96 (2011) 21002.
[3] http://cmsinfo.web.cern.ch/cmsinfo/

Primary author: Mr WELTI, Jan (University of Helsinki)

Presenter: Mr WELTI, Jan (University of Helsinki)

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

Search for light charged Higgs bosons in top-quark decays with the ATLAS experiment

A search for light (90 GeV < m(H+) < 160 GeV) charged Higgs bosons by the ATLAS experiment, based on 1.03/fb of proton-proton collision data at sqrt(s) = 7 TeV using the single-lepton and dilepton channels in ttbar decays with a leptonically decaying tau in the final state is presented.

Primary authors: Mr MADSEN, Alexander (Uppsala University); Dr FERRARI, Arnaud (Uppsala University); Mr PELIKAN, Daniel (Uppsala University)

Presenter: Mr MADSEN, Alexander (Uppsala University)

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

"Absolute Luminosity For ATLAS"–From installation to first data physics data

The ALFA detector system (Absolute Luminosity For ATLAS) aims for measuring the absolute LHC luminosity with high precision by using pp-scattering under small angles. Scintillating fibers tracking detectors are positioned 240 m from LHC interaction point 1 inside Roman Pots at millimeter distance from the LHC beam axis. The detectors consist of layers of 64 scintillating square fibers of 500 μm size in a U-V configuration. The layers are staggered 10 times to improve the spatial resolution to about 30 micrometers. A total of 11680 scintillating fibers are read out on the 8 ALFA detectors through 184 Multi Anode Photomultiplier Tubes with 64 channels each. Each detector has dedicated scintillating trigger tiles read out by 8 mm Photomultiplier Tubes via clear fibers.
The ALFA detectors system was installed during the winter shutdown 2011-2012. Since then the detectors system has been undergoing commission. This includes building of a standalone trigger and DAQ system as well as the integration into the central ALTLAS trigger and DAQ system.
The movement system for the Roman Pots has been commissioned to only allow movement from the central CERN control room. The Roman Pots has been aligned to the beam using "scraping" (beam based alignment). This compliments the survey and metrology measurement previously made and gives the actual beam position with high precision.
In the last days with proton beam in 2011 a special optics with beta* = 90 m was used in LHC and this allowed a total cross-section measurement using ALFA integrated in ATLAS.
Based on the experience from 2011 a few upgrades of ALFA are being prepared for 2012 and beyond. These are mainly to improve triggering.

Primary author: Mr JAKOBSEN, Sune (Niels Bohr Institute / CERN)

Presenter: Mr JAKOBSEN, Sune (Niels Bohr Institute / CERN)

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

Invariant mass distributions of SUSY cascade decays

If supersymmetry is discovered at the LHC, the next challenge will be to determine sparticle properties as accurately as possible. For the determination of unknown masses in SUSY cascade decays, methods based on the observed particles' kinematic endpoints have been developed. In order to accurately determine such endpoints, knowledge of the correct theoretical distribution shapes is important. In addition, such distribution shapes contain additional information about the sparticles involved in the cascade. Analytical shape formulas for distributions resulting from cascades with taus have been derived and are here presented.

Primary author: Mr KVELLESTAD, Anders (University of Oslo)

Presenter: Mr KVELLESTAD, Anders (University of Oslo)

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

Modeling the Impact Parameter Dependence of the nPDFs With EKS98 and EPS09 Parametrizations

The knowledge of the parton distribution functions (PDFs) is essential for interpreting any hard-process results from hadronic collisions. For the free proton, the PDFs have been determined with good accuracy from experimental data and DGLAP evolution. However, when colliding heavy ions where the protons are bound to a nuclei, the free proton PDFs cannot be used anymore but the nuclear PDFs (nPDFs) are required. The nuclear modifications of PDFs have been successfully determined through a global DGLAP analysis by our URHIC theory group, first in the EKS98 and more lately EPS09 nPDF sets.

So far these nPDFs are taken to be spatially independent. However, it is reasonable to assume that the nuclear modification varies when going from the dense center of a nucleus to its more dilute edge. Now we have developed a model framework where the nuclear modifications become a function of the nuclear thickness. In my presentation, I will introduce the key concepts and assumptions of our model and show the outcome. Also, as an application example, I present the central-to-peripheral ratio (R_{CP}) calculation of primary jet production in heavy ion collisions at RHIC and LHC to illustrate the effect arising from our model.

Primary author: Mr HELENIUS, Ilkka (Department of Physics, University of Jyväskylä)

Co-authors: Mr SALGADO, Carlos A. (Universidade de Santiago de Compostela); Ms HONKANEN, Heli (University of Jyväskylä); Prof. ESKOLA, Kari J. (University of Jyväskylä)

Presenter: Mr HELENIUS, Ilkka (Department of Physics, University of Jyväskylä)

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

Challenges and Perspectives in Quarkonium Polarization Measurements

An extensive experimental program using quarkonium production to study QCD in hadron colliders is well under way. Differential cross-sections and spin alignments of the produced quarkonia play a central role and a number of theoretical models has been developed to interpret the measurements. This talk reviews existing polarization measurements and some related challenges. It then describes a new formalism recently developed to unambiguously study quarkonium polarization through a multi-dimensional analysis of the dilepton angular decay distributions and presents near-future prospects for improved measurements.

Primary author: KRÄTSCHMER, Ilse (Hephy Vienna)

Presenter: KRÄTSCHMER, Ilse (Hephy Vienna)

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

Reconstructing the rest frame of tau+tau- resonances at the LHC

At LHC energies bosons such as Z and Higgs bosons will be produced with a large boost wrt. the detector frame. Due to the escaping neutrinos in the tau decay, reconstructing the rest frame of such a heavy boson decaying into a pair of taus is highly non-trivial. I will present a new and simple method for rest frame reconstruction that works for all event topologies and for a large fraction of events can be applied without using any information about the missing transverse energy in the event. Finally some applications of the rest frame reconstructions will be shown.

Primary author: ROSENDAHL, Peter Lundgaard (University of Bergen)

Co-authors: STUGU, Bjarne (University of Bergen); BURGESS, Thomas (University of Bergen)

Presenter: ROSENDAHL, Peter Lundgaard (University of Bergen)

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

IPPOG - outreach activites and resources

We will present IPPOG - the International Particle Physics Outreach Group and some of its activities and resources that it provides. The main emphasis will be on: Masterclasses - where high school students come to the University for one full day to learn about particle physics and analyze real data from the LHC experiments, a new database which collects good examples of materials and other resources for outreach, and the preparation of Discovery packages which aims to provide background material, interviews, animations etc related to potential discoveries at the LHC.

Primary authors: Prof. OULD-SAADA, Farid (University of Oslo); RATHSMAN, Johan (Lund University)

Presenters: Prof. OULD-SAADA, Farid (University of Oslo); RATHSMAN, Johan (Lund University)

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

An SU(3) parton shower and orthogonal color bases

Parton showers are essential tools for predicting and understanding LHC results. However, they all rely on a set of approximations, one of them being the approximation of the three colors of nature with infinitely many. In this talk I will present the first results from an SU(3) parton shower in which the radiation is described using full QCD.

I will also report on progress in the calculations necessary to describe the color space, namely on the construction of minimal orthonormal color space bases. This could potentially speed up calculations in QCD very significantly - both in parton showers and in fixed order calculations.

Primary author: Dr SJÖDAHL, Malin (Lund University)

Presenter: Dr SJÖDAHL, Malin (Lund University)

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

A model for the color suppressed decay mode B^0 –> 2 \pi^0

I present a model for the color suppressed decay mode B^0 –> 2 \pi^0. The model is an extension of (heavy-light) chiral quark models. The color suppressed (nonfactorizable) decay mode is obtained in terms of a model dependent gluon condensate. The model can account for the experimental result. Unfortunately, the theoretical result obtained within the model is very sensitive to the two model dependent parameters: The gluon condensate and the constituent light quark mass.

Primary authors: EEG, Jan Olav (University of Oslo, Theory Group); PALMER, Teresa (University of Oslo, Theory Group)

Presenter: PALMER, Teresa (University of Oslo, Theory Group)

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

Search for new gauge bosons and other exotic particles with ATLAS

The ATLAS detector has been used to search for exotic particles in final states with one lepton and missing transverse momentum and final states with a lepton pair. I will present results from analyses of around 1/fb of proton-proton data for both searches. I will describe the motivation for carrying out such searches, explain some of the details of the analyses, and present the final distributions obtained. I will finally present statistical exclusion limits on certain reference models, including new charged (W') and neutral (Z') gauge bosons as well as RS gravitons.

Primary author: Mr BUGGE, Magnar Kopangen (University of Oslo)

Presenter: Mr BUGGE, Magnar Kopangen (University of Oslo)

Contribution ID: **12** Type: **not specified**

Muon Performance of the ATLAS Detector

The first two years of p-p collisions at sqrt(s)=7 TeV at LHC have
provided a rich data sample with which the muon performance of the ATLAS detector could be measured in high detail. Decays of Z, W and J/psi particles to muons are used, corresponding to an integrated luminosity of 40pb^-1 in 2010 and 2.5fb^-1 in 2011. The muon identification, reconstruction and trigger efficiencies are reported and compared to the expectation from current ATLAS simulation. ATLAS is designed for a precise muon momentum determination up to transverse momenta of 1 TeV. Measurements of the muon momentum scale and resolution are presented and discussed under aspects of alignment and inter-alignment of the charged particle detectors in ATLAS.

Primary author: Dr LIEBIG, Wolfgang (University of Bergen)

Presenter: Dr LIEBIG, Wolfgang (University of Bergen)

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

IceCube Solar Dark Matter search and Global SUSY fits with IceCube data

IceCube Solar Dark Matter search and Global SUSY fits with IceCube data

Primary author: Mr DANNINGER, Matthias (Stockholm University)

Presenter: Mr DANNINGER, Matthias (Stockholm University)

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

H->gammagamma search at ATLAS

In this talk the H->gammagamma search of ATLAS will be presented.
This decay channel is one of the most powerful ones at low values of the Higgs mass. A light Higgs boson is preferred by precision measurements of electroweak processes from various experiments. Results using 4.9 (possibly 5.2)/fb of proton-proton collision data collected during 2011 will be shown. During 2011 data taking, the pileup conditions changed dramatically after a technical stop; the average number of interactions per bunch crossing doubled from around 6 to around 12. That brings about new challenges. The emphasis of the talk will be on recent improvements to the sensitivity of the analysis and the latest results.

Primary author: SMESTAD, Lillian

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

All-loop amplitudes of the Reggeon Field Theory via the stochastic model

The reaction-diffusion (or stochastic) approach is applied to the computation of amplitudes of the Reggeon Field Theory to all orders in the number of Pomeron loops. We develop the numerical calculation technique and use it for computing total, elastic and diffractive proton-proton cross sections for the energies up to the energies of the LHC.

Summary

The phenomenological Reggeon Field Theory (or Reggeon Calculus) was introduced by Gribov in 1968. It is based on very general properties of the elastic amplitude such as analiticity and t-channel unitarity. It still remains one of the few aproaches with a predictive power when one speaks about total, elastic and diffractive hadronic cross sections at high energies. The RFT is formulated in terms of two Pomeron fields in 2 transverse and 1 "time" dimension which corresponds to the total rapidity of the interaction. Importance of the Pomerons interactions and Pomeron loops has been recognized long ago especially in connection with the diffractive events (events with rapidity gaps).

Subsequently it was shown that evolution of a particular stochastic system of classical particles ("partons") allows a field-theoretical description corresponding to the RFT Lagrangian. The s-parton inclusive distributions in the 2-dimensional plane as functions of evolution time coincide with the exact s-point Green functions of the Reggeon Field Theory up to a constant dimentional factor. The exact amplitude is obtained via convolution of projectile- and target-associated Green function sets.

Following these principles we developed a numerical calculation technique which we use to compute the elastic amplitude and consequently elastic and total, via the Optical theorem, cross section. With slight modifications this technique can be also used for computing the diffractive cross sections.

Primary author: Dr KOLEVATOV, Rodion (University of Oslo)

Co-authors: Dr BORESKOV, Konstantin (ITEP, Moscow); Prof. BRAVINA, Larissa (University of Oslo)

Presenter: Dr KOLEVATOV, Rodion (University of Oslo)

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

Bs STUDIES IN THE CHANNEL J/ψφ IN THE CMS EXPERIMENT AT LHC

LHC (Large Hadron Collider) is the most powerful particle collider in the world, in which many experiments are installed with the aim of studying physics at high energy. At design level, LHC is able to collide protons with center of mass energy of 14 TeV. One of the main experiments installed at one of the collision points is CMS (Compact Muon Solenoid).
The Bs is a meson which is composed of b and s quarks, and it is a relatively long-living particle. This feature is useful to discriminate it from the plenty of particles which are produced in each collision of LHC. Due to its instability, after having traveled some mil- limeters in the detector, it decays into more stable particles, which are then reconstructed in the detector with the reconstruction software.
One of the prominent decay channels of Bs is the Bs $\longrightarrow$ J/ψφ, with the J/ψ decaying in two muons and the φ decaying in two kaons. This channel, more precisely the presence of the J/ψ, can fire the triggers of the experiment and permits us to reconstruct the full decay chain and the kinematics of the decay.
The Bs study has several steps, which depend on the available statistics. The first steps have been the detection and measurement of the invariant mass peak and the measurement of the differential cross sections dσ/dpT and dσ/d|y|, where pT is the transverse momentum and y the rapidity. Next steps will be measurement of ΔΓ, the difference of decay rate of the two states of Bs, and Φs, a measurement related to the CP violation in this channel.

Primary author: Mr FEDI, Giacomo (University of Helsinki)

Presenter: Mr FEDI, Giacomo (University of Helsinki)

Contribution ID: **17** Type: **not specified**

Collider Phenomenology at the LHC and Beyond

Tuesday 3 January 2012 08:30 (1 hour)

Presenter: Prof. QUIGG, Chris (Fermilab)

Session Classification: Invited Talks

Contribution ID: **18** Type: **not specified**

Recent ATLAS results

Tuesday 3 January 2012 15:00 (1 hour)

Presenter: Prof. READ, Alex (University of Oslo)

Session Classification: Invited Talks

Contribution ID: **19** Type: **not specified**

Recent CMS results

Tuesday 3 January 2012 16:00 (1 hour)

Presenter: Prof. EEROLA, Paula (University of Helsinki)

Session Classification: Invited Talks

Contribution ID: **20** Type: **not specified**

Why and how develop new accelerators?

After a pioneering period 1920-1960 accelerator development has been the domain, not of HEP researchers, but of accelerator specialists who primarily see the new accelerators themselves as the interesting objects, not also their use for physic research. Certainly, accelerator technology specialists are absolutely necessary for the development of new accelerators, but one can now also see a trend in High Energy Physics for experimental HEP researchers again taking an interest in the challenging technical problems of the development of, not only new particle detectors, by also of new accelerators. This is probably so because it has become so evident and that we will have to go to even higher energies and luminosities in order to advance the in the field of High Energy Physics research. I my talk I will give an overview of the status and potentialities of ongoing accelerator development projects in the Nordic countries and in Europe.

Primary author: Prof. EKELÖF, Tord (Uppsala University)

Contribution ID: **21** Type: **not specified**

Timing performance of the ATLAS calorimeters

In my talk I will present an analysis of the timing performance in the ATLAS Tile and Liquid Argon calorimeters using Z->mumu data, the results of which are used in the calibration of speed/beta measurements in the search for stable massive particles (SMPs). Several methods for weighting the beta measurements from individual calorimeter cells will be discussed, as well as methods for data reduction to retain a high efficiency while reducing background in the SMP signal region. Lastly, the accuracy of the estimated errors on weighted beta measurements is investigated.

Primary author: Mr SPANGENBERG, Martin (Master student)

Presenter: Mr SPANGENBERG, Martin (Master student)

Contribution ID: **22** Type: **not specified**

Dark Matter Structures In Cosmological Simulations

In this talk I will give an overview of cosmological simulations of dark matter systems, and give an overview of universal features found in these simulations.

I will also discuss the "universal attractor of dark matter haloes", which relates the velocity distribution to the density profile of dark matter systems.

Primary author: Mr SPARRE, Martin (NBI/DARK)

Presenter: Mr SPARRE, Martin (NBI/DARK)

Contribution ID: **23** Type: **not specified**

Resonance searches in multilepton final states

Global fits using templates can prove to be an interesting approach to finding heavy resonances or deviances from the Standard Model in general.
This presentation will shed light on the application of the method for WW, Z->tau tau and ttbar cross section measurements and the possible scopes for multilepton final states.

Primary author: Mr LØVSCHALL-JENSEN, Ask Emil (Ph.D. student HEP, NBI)

Presenter: Mr LØVSCHALL-JENSEN, Ask Emil (Ph.D. student HEP, NBI)

Contribution ID: **24** Type: **not specified**

Measurement of the W-Boson Mass with the ATLAS Detector at LHC

My Master Thesis is about a mass measurement of the W-boson with the ATLAS detector at LHC. It is a high precision measurement and I have focused on the W to muon channel and the mass measurement from the pT-distribution of the muon.

Primary author: SØRENSEN, Bjørn (student)

Presenter: SØRENSEN, Bjørn (student)

Contribution ID: **25** Type: **not specified**

Jets in a quark-gluon plasma

We describe the coherent QCD radiation off a quark-antiquark antenna traversing a colored medium. Features of the spectrum are discussed and relevant scales of the problem are identified. In particular, the regimes where interference effects prevail are shown to be relevant in light of the data on inclusive jets in heavy-ion collisions at the LHC.

Primary author: Dr TYWONIUK, Konrad (Lund University)

Presenter: Dr TYWONIUK, Konrad (Lund University)

Contribution ID: **26** Type: **not specified**

Complex Triple Gauge Boson Couplings

Generalized effective lagrangians is the usual method for describing possible deviations from the Standard Model in Di-boson studies. Traditionally the strength of the additional terms in the lagrangian are parametrized by Triple Gauge Boson Couplings (TGCs) assumed to be real. This assumption is not required and I will present a study of complex triple gauge boson couplings using a modified effective TGC lagrangian. Focus will be on W-pair production in pp collisions and the distributions of the purely leptonic (lvlv) decay channel will be evaluated. Simulations using the modified lagrangian are compared to SHERPA (an event generator which includes anomalous TGCs) Monte Carlo simulations to understand how the distributions of the decay particles are affected by including the imaginary part of the couplings.

Primary author: RASMUSSEN, Christine Overgaard (NBI)

Presenter: RASMUSSEN, Christine Overgaard (NBI)

Contribution ID: **27** Type: **not specified**

Diagnosis of Supersymmetry Breaking Mediation Schemes by Mass Reconstruction at the LHC

If supersymmetry is discovered at the LHC, the next question will be the determination of the underlying model. While this may be challenging or even intractable, a more optimistic question is whether we can understand the main contours of any particular paradigm of the mediation of su- persymmetry breaking. The determination of superpartner masses through endpoint measurements of kinematic observables arising from cascade decays is a powerful diagnostic tool. In particular, the determination of the gaugino sector has the potential to discriminate between certain media- tion schemes (not all schemes, and not between different UV realizations of a given scheme). We reconstruct gaugino masses, choosing a model where anomaly contributions to SUSY breaking are important (KKLT compactification), and find the gaugino unification scale. Moreover, reconstruc- tion of other superpartner masses allows us to solve for the parameters defining the UV model. The analysis is performed in the stop and stau coannihilation regions where the lightest neutralinos are mainly gauginos, to additionally satisfy dark matter constraints. We thus develop observables to determine stau and stop masses to verify that the coannihilation mechanism is indeed operational, and solve for the relic density.

Primary authors: Dr KRISLOCK, Abram (Stockholm University); Dr DUTTA, Bhaskar (Texas A&M University); Mr WANG, Kechen (Texas A&M University); Dr SINHA, Kuver (Texas A&M University); Dr KAMON, Teruki (Kyungpook National University, Texas A&M University)

Presenter: Dr KRISLOCK, Abram (Stockholm University)

Contribution ID: **28** Type: **not specified**

Seperation of H to ZZ to 4l from the SM ZZ to 4l background

The standard model production of a ZZ diboson is considered an irriducible background to the potential production of H to ZZ. Considering the 4 lepton final state I have in my work investigated if a seperation between the two could be obtained using mass independent distributions.
While the Higgs boson is produced mainly from gluon fusion and has zero spin, the standard model ZZ diboson system is produced mainly from qqbar and thus with spin one, resulting in differences in the rapidity and angular distributions.
The result of a multivariate analysis trained on Monte Carlo simulations will be presented

Primary author: Mr PEDERSEN, Lars Egholm (Niels Bohr Institute)

Presenter: Mr PEDERSEN, Lars Egholm (Niels Bohr Institute)

Contribution ID: **29** Type: **not specified**

Upper limits on the branching ratio for top decaying to a bottom and a charged Higgs boson

Based on 1.03 fb-1 of proton-proton collision data at sqrt(s) = 7 TeV recorded with the ATLAS detector, upper limits on the branching ratio of top decaying to a bottom and a charged Higgs were extracted by performing a profile likelihood statistical analysis. Using the single- and di-lepton channels with leptonically decaying tau(s) in the final state, we found that data agree well with the Standard Model expectation. Assuming B(H+ -> tau nu) = 1, the upper limits on the branching fraction B(t -> bH+) were found to be between 5.2% and 14.1% for H+ masses in the range 90 GeV to 160 GeV. Previous measurements of the ttbar cross sections have usually been made under the assumption that the top decays exclusively to a bottom and a W boson, but this analysis can obviously not rely on such an assumption. Thus, a control region was used to estimate the ttbar cross section. However, one can not simply neglect a small, but potential signal contamination in the control region. In order to account for a potential signal contamination, the control region was implemented in the likelihood function as a counting experiment.

Primary author: Ms HATTREM RADDUM, Silje (University of Oslo)

Presenter: Ms HATTREM RADDUM, Silje (University of Oslo)

Contribution ID: **30** Type: **not specified**

Tuning MCs using ATLAS boson transverse momentum measurements

Recent ATLAS Z pT and W pT measurements are used to tune MC descriptions in Pythia and POWHEG MC simulations. The results for the
Pythia6 shower tune and Pythia6+POWHEG studies on ATLAS Z pT data are
presented.

Primary author: Ms YATSENKO, Elena (ATLAS DESY)

Presenter: Ms YATSENKO, Elena (ATLAS DESY)

Contribution ID: **31** Type: **not specified**

Master thesis overview: BSM with new Higgs limits

The new Higgs results are close to the expected values for the Standard Model. How will this affect BSM models like Supersymmetry or 2 Higgs Doublet Models?

Primary author: Mr PETTERSEN, Helge (University of Bergen)

Presenter: Mr PETTERSEN, Helge (University of Bergen)

Contribution ID: **32** Type: **not specified**

Tau Polarisation Measurement in Z Decays in ATLAS

Tau leptons can be used to measure the parity violation in the electroweak theory. I will present a study of the polarisation of the Z-boson using tau decays at the ATLAS detector at the Large Hadron Collider, CERN.

Primary author: Ms DEIGAARD, Ingrid (HEP)

Presenter: Ms DEIGAARD, Ingrid (HEP)

Contribution ID: **33** Type: **not specified**

Tau identification in the ATLAS experiment

Tau leptons play an important role in Higgs searches and in searches for physics beyond the Standard Model. Therefore, an efficient identification of low and high energetic tau leptons is necessary which is also robust under conditions with multiple interations per bunch crossing (pileup). In the talk, an overview over the current tau identification with the ATLAS detector will be given.

Primary author: PINGEL, Almut (PhD at NBI)

Presenter: PINGEL, Almut (PhD at NBI)

Contribution ID: **34** Type: **not specified**

Data driven background estimation in SM H to tau tau

The SM Higgs to tau tau decay has two dominating backgrounds: QCD and the irreducible background from Z decay. In the analysis I've been working with we've been trying to estimate both of these from data motivated by the potential of eliminating the systematics from Monte Carlo.

I will give a short presentation on the methods used and on my work with the analysis.

Primary author: GALSTER, Gorm (Student, The Niels Bohr Institute)

Presenter: GALSTER, Gorm (Student, The Niels Bohr Institute)

Contribution ID: **36** Type: **not specified**

Searches for mSUGRA in τ channels at ATLAS

Searches for mSUGRA models with τ-rich signatures in the $\tau - \chi$ coannihilation region, using 2010 data as a training ground in preparation for analyses with the full 2011 data set is presented. The models are chosen such that they are compatible with cosmological bounds. The analysis presents data collected in 2010 and compares to signal and background MC simulations.
After a basic event selection and cuts to reject QCD events, a single cut to increase the signal significance is applied. Finally the data is split into $n\tau = 0$, $n\tau = 1$, and $n\tau \geq 2$ channels and exclusion limits are presented. It is shown that by including the contribution from τ-signal, it is possible to improve the limits compared to a 0-lepton analysis.
The prospect for an one tau analysis with the full 2011 data set is also discussed, with special emphasis on data driven methods of background estimation.

Primary author: Mr DALE, Ørjan (University of Bergen)

Contribution ID: **37** Type: **not specified**

Measuring the 3D shape of galaxy clusters

Clusters of galaxies are increasingly exploited as cosmological probes. For accurate measurements of cluster properties it is extremely important to constrain the three-dimensional shape of clusters. If non-spherical components of the X-ray emitting intracluster gas are not taken into account, it is very likely that one will obtain erroneous estimates for cluster mass and gas properties. We propose a novel method for constraining the true 3D shape of galaxy clusters, modeling the emission of the hot intracluster gas. By adding new degrees of freedom to the X-ray emission models, we are able to differentiate between the case of a spherically symmetric cluster and one that is elongated along the line of sight. This differentiation can not usually be made using ordinary lensing data or simplified X-ray emission models. The method is applied to mock Chandra data, enabling accurate measurements of total cluster mass along with gas temperature and density profiles. In the future it will be extended to real data and, combined with alternative methods for cluster parameter estimation, provide a valuable future asset in the toolbox for precision cosmology using large scale structures.

Primary author: Mr SKIELBOE, Andreas (Dark Cosmology Centre)

Presenter: Mr SKIELBOE, Andreas (Dark Cosmology Centre)

Contribution ID: **38** Type: **not specified**

Collider Phenomenology at the LHC and Beyond

Wednesday 4 January 2012 08:30 (1 hour)

Presenter: Prof. QUIGG, Chris (Fermilab)

Session Classification: Invited Talks

Contribution ID: **40** Type: **not specified**

Heavy Ion Physics

Thursday 5 January 2012 16:00 (1 hour)

Presenter: Dr WIEDEMANN, Urs (CERN)

Session Classification: Invited Talks

Contribution ID: **41** Type: **not specified**

Heavy Ion Physics

Wednesday 4 January 2012 15:00 (1 hour)

Presenter: Dr WIEDEMANN, Urs (CERN)

Session Classification: Invited Talks

Contribution ID: **42** Type: **not specified**

Recent ATLAS results

Wednesday 4 January 2012 16:00 (1 hour)

Presenter: Prof. READ, Alex (University of Oslo)

Session Classification: Invited Talks

Contribution ID: **43** Type: **not specified**

Heavy Ion Physics

Contribution ID: **44** Type: **not specified**

Heavy Ion Physics

Thursday 5 January 2012 08:30 (1 hour)

Presenter: Dr WIEDEMANN, Urs (CERN)

Session Classification: Invited Talks

Contribution ID: **45** Type: **not specified**

Neutrino Physics

Thursday 5 January 2012 15:00 (1 hour)

Presenter: Prof. DAVID, Wark (Imperial College London)

Session Classification: Invited Talks

Contribution ID: **46** Type: **not specified**

Physics at the LHC Upgrade

Friday 6 January 2012 08:30 (45 minutes)

Presenter: Prof. DE ROECK, Albert (CERN & Antwerpen)

Session Classification: Invited Talks

Contribution ID: **47** Type: **not specified**

Physics at the LHC Upgrade

Friday 6 January 2012 09:25 (50 minutes)

Presenter: Prof. DE ROECK, Albert (CERN & Antwerpen)

Session Classification: Invited Talks

Contribution ID: **48** Type: **not specified**

Collider Phenomenology at the LHC and Beyond

Friday 6 January 2012 15:00 (1 hour)

Presenter: Prof. QUIGG, Chris (Fermilab)

Session Classification: Invited Talks

Contribution ID: **49** Type: **not specified**

Neutrino Physics

Friday 6 January 2012 16:00 (1 hour)

Presenter: Prof. DAVID, Wark (Imperial College London)

Session Classification: Invited Talks

Contribution ID: **50** Type: **not specified**

An SU(3) parton shower and orthogonal color bases

Tuesday 3 January 2012 17:30 (15 minutes)

Presenter: Dr SJÖDAHL, Malin (Lund University)

Session Classification: Contributed Talks

Contribution ID: **51** Type: **not specified**

Total Cross Section Measurement with TOTEM at the LHC

Tuesday 3 January 2012 17:45 (15 minutes)

Presenter: Mr WELTI, Jan (University of Helsinki)

Session Classification: Contributed Talks

Contribution ID: **52** Type: **not specified**

Resonance searches in multilepton final states

Tuesday 3 January 2012 18:00 (15 minutes)

Presenter: Mr LØVSCHALL-JENSEN, Ask Emil (Niels Bohr Institute)

Session Classification: Contributed Talks

Contribution ID: **53** Type: **not specified**

IceCube Solar Dark Matter search and Global SUSY fits with IceCube data

Tuesday 3 January 2012 18:15 (15 minutes)

Presenter: Mr DANNINGER, Matthias (Stockholm University)

Session Classification: Contributed Talks

Contribution ID: **54** Type: **not specified**

All-loop amplitudes of the Reggeon Field Theory via the stochastic model

Tuesday 3 January 2012 18:30 (15 minutes)

Presenter: Dr KOLEVATOV, Rodion (University of Oslo)

Session Classification: Contributed Talks

Contribution ID: **55** Type: **not specified**

Tuning MCs using ATLAS boson transverse momentum measurements

Tuesday 3 January 2012 18:45 (15 minutes)

Presenter: Ms YATSENKO, Elena (DESY)

Session Classification: Contributed Talks

Contribution ID: **56** Type: **not specified**

Invariant mass distributions of SUSY cascade decays

Tuesday 3 January 2012 20:00 (15 minutes)

Presenter: Mr KVELLESTAD, Anders (University of Oslo)

Session Classification: Contributed Talks

Contribution ID: **57** Type: **not specified**

Complex Triple Gauge Boson Couplings

Tuesday 3 January 2012 20:15 (15 minutes)

Presenter: Ms RASMUSSEN, Christine Overgaard (Niels Bohr Institute)

Session Classification: Contributed Talks

Contribution ID: **58** Type: **not specified**

Tau identification in the ATLAS experiment

Tuesday 3 January 2012 20:30 (15 minutes)

Presenter: Ms PINGEL, Almut (Niels Bohr Institute)

Session Classification: Contributed Talks

Contribution ID: **59** Type: **not specified**

Bs studies in the channel J/ψφ at the CMS experiment at LHC

Tuesday 3 January 2012 20:45 (15 minutes)

Presenter: Mr FEDI, Giacomo (University of Helsinki)

Session Classification: Contributed Talks

Contribution ID: **60** Type: **not specified**

Challenges and Perspectives in Quarkonium Polarization Measurements

Wednesday 4 January 2012 17:30 (15 minutes)

Presenter: Ms KRÄTSCHMER, Ilse (Hephy Vienna)

Session Classification: Contributed Talks

Contribution ID: **61** Type: **not specified**

Seperation of H to ZZ to 4l from the SM ZZ to 4l background

Wednesday 4 January 2012 17:45 (15 minutes)

Presenter: Mr PEDERSEN, Lars Egholm (Niels Bohr Institute)

Session Classification: Contributed Talks

Contribution ID: **62** Type: **not specified**

Diagnosis of Supersymmetry Breaking Mediation Schemes by Mass Reconstruction at the LHC

Wednesday 4 January 2012 18:00 (15 minutes)

Presenter: Dr KRISLOCK, Abram (Stockholm University)

Session Classification: Contributed Talks

Contribution ID: **63** Type: **not specified**

Dark Matter Structures In Cosmological Simulations

Wednesday 4 January 2012 18:15 (15 minutes)

Presenter: Mr SPARRE, Martin (Niels Bohr Institute/Dark Cosmology center)

Session Classification: Contributed Talks

Contribution ID: **64** Type: **not specified**

Chiral symmetry at high energies

Wednesday 4 January 2012 18:30 (15 minutes)

Presenter: Prof. BIJNENS, Johan (Lund University)

Session Classification: Contributed Talks

Contribution ID: **65** Type: **not specified**

Timing performance of the ATLAS calorimeters

Wednesday 4 January 2012 18:45 (15 minutes)

Presenter: Mr SPANGENBERG, Martin (Niels Bohr Institute)

Session Classification: Contributed Talks

Contribution ID: **66** Type: **not specified**

Searches for mSUGRA in τ channels at ATLAS

Wednesday 4 January 2012 20:00 (15 minutes)

Presenter: Mr DALE, Ørjan (University of Bergen)

Session Classification: Contributed Talks

Contribution ID: **67** Type: **not specified**

Measurement of the W-Boson Mass with the ATLAS Detector at LHC

Wednesday 4 January 2012 20:15 (15 minutes)

Presenter: Mr SORENSEN, Bjørn (Niels Bohr Institute)

Session Classification: Contributed Talks

Contribution ID: **68** Type: **not specified**

Modeling the Impact Parameter Dependence of the nPDFs With EKS98 and EPS09 Parametrizations

Wednesday 4 January 2012 20:30 (15 minutes)

Presenter: Mr HELENIUS, Ilka (University of Jyväskylä)

Session Classification: Contributed Talks

Contribution ID: **69** Type: **not specified**

Search for new gauge bosons and other exotic particles with ATLAS

Wednesday 4 January 2012 20:45 (15 minutes)

Presenter: Mr BUGGE, Magnar Kopangen (University of Oslo)

Session Classification: Contributed Talks

Contribution ID: **70** Type: **not specified**

Reconstructing the rest frame of tau+tau- resonances at the LHC

Thursday 5 January 2012 17:30 (15 minutes)

Presenter: Mr ROSENDAHL, Peter Lundgaard (University of Bergen)

Session Classification: Contributed Talks

Contribution ID: **71** Type: **not specified**

BSM with new Higgs limits

Thursday 5 January 2012 18:30 (15 minutes)

Presenter: Mr PETTERSEN, Helge (University of Bergen)

Session Classification: Contributed Talks

Contribution ID: **72** Type: **not specified**

"Absolute Luminosity For ATLAS"–From installation to first data physics data

Thursday 5 January 2012 18:45 (15 minutes)

Presenter: Mr JAKOBSEN, Sune (Niels Bohr Institute)

Session Classification: Contributed Talks

Contribution ID: **73** Type: **not specified**

A model for the color suppressed decay mode B^0 –> 2 \pi^0

Thursday 5 January 2012 17:45 (15 minutes)

Presenter: Dr PALMER, Teresa (University of Oslo)

Session Classification: Contributed Talks

Contribution ID: **74** Type: **not specified**

Search for light charged Higgs bosons in top-quark decays with the ATLAS experiment

Thursday 5 January 2012 18:00 (15 minutes)

Presenter: Mr MADSEN, Alexander (Uppsala University)

Session Classification: Contributed Talks

Contribution ID: **75** Type: **not specified**

Upper limits on the branching ratio for top decaying to a bottom and a charged Higgs boson

Thursday 5 January 2012 18:15 (15 minutes)

Presenter: Ms HATTREM RADDUM, Silje (University of Oslo)

Session Classification: Contributed Talks

Contribution ID: **76** Type: **not specified**

Jets in a quark-gluon plasma

Thursday 5 January 2012 20:00 (15 minutes)

Presenter: Dr TYWONIUK, Konrad (University of Lund)

Session Classification: Contributed Talks

Contribution ID: **77** Type: **not specified**

H->gammagamma search at ATLAS

Thursday 5 January 2012 20:15 (15 minutes)

Presenter: Ms SMESTAD, Lillian (University of Oslo)

Session Classification: Contributed Talks

Contribution ID: **78** Type: **not specified**

Measuring the 3D shape of galaxy clusters

Thursday 5 January 2012 20:30 (15 minutes)

Presenter: Mr SKIELBOE, Andreas (Dark Cosmology center)

Session Classification: Contributed Talks

Contribution ID: **79** Type: **not specified**

IPPOG - outreach activites and resources

Thursday 5 January 2012 20:45 (15 minutes)

Presenters: Prof. OULD-SAADA, Farid (University of Oslo); Prof. RATHSMAN, Johan (Lund University)

Session Classification: Contributed Talks

Contribution ID: **80** Type: **not specified**

Tau Polarisation Measurement in Z Decays in ATLAS

Friday 6 January 2012 17:30 (15 minutes)

Presenter: Mr DEIGAARD, Ingrid (HEHI)

Session Classification: Contributed Talks

Contribution ID: **81** Type: **not specified**

Muon Performance of the ATLAS Detector

Friday 6 January 2012 17:45 (15 minutes)

Presenter: Dr LIEBIG, Wofgang (University of Bergen)

Session Classification: Contributed Talks

Contribution ID: **82** Type: **not specified**

Data driven background estimation in SM H to tau tau

Friday 6 January 2012 18:00 (15 minutes)

Presenter: Mr GALSTER, Gorm (Niels Bohr Institute)

Session Classification: Contributed Talks

Contribution ID: **83** Type: **not specified**

Why and how develop new accelerators?

Friday 6 January 2012 18:45 (15 minutes)

Presenter: Prof. EKELÖF, Tord (Uppsala University)

Session Classification: Contributed Talks

Contribution ID: **85** Type: **not specified**

Search for supersymmetry in 2 lepton final states

Friday 6 January 2012 18:15 (15 minutes)

Presenter: Mr GRAMSTAD, Eirik (University of Oslo)

Session Classification: Contributed Talks

Contribution ID: **86** Type: **not specified**

ZZ anomalous triple gauge couplings in ATLAS

Friday 6 January 2012 18:30 (15 minutes)

Presenter: Mr GREGERSEN, Kristian (Niels Bohr Institute)

Session Classification: Contributed Talks