[Room/Salle : Campaign A] ***Chair: PW. Krieger, U.Toronto***

TU-P5-1 **14h15**

KOSTAS KORDAS, University of Toronto

Recent Results From The Collider Detector At Fermilab

The Tevatron collider at Fermilab is currently providing collisions of protons and anti-protons at a center-of-momentum energy of 1.96 TeV, which is the highest energy ever studied. The Collider Detector at Fermilab (CDF) is one of the two multipurpose detectors observing the outcome of such collisions. After the major upgrades to the collider and the

detectors, the Fermilab "Run II" period of operations is well underway. The CDF II collaboration is collecting physics-quality data for the last two years and has now at hand a dataset which is more than a factor of four larger than the one used to establish the existence of the top quark in 1995. The key upgrades and the performance of the CDF detector will be presented briefly. The bulk of the talk will be devoted to the discussion of recent results from the CDF II collaboration, with an emphasis in the areas where the Canadian group is contributing. Finally, the prospects for several other interesting measurements will be discussed.

TU-P5-2 14h45

RACHID MAZINI, University of Toronto

The ATLAS Detector Physics Potential

The high energy and high luminosity of the LHC pp collider should offer a very rich physics programme. The Standard Model Higgs boson should be discovered over the full range of allowed masses, and its mass and coupling parameters should be measured with a sufficient accuracy. Theories beyond the SM, such as Supersymmetry, Technicolour, new gauge bosons, compositness and Extra dimensions will also be probed. Several precision measurements will be made in the B-physics sector, in the top sector and in the electroweak sector (W mass, Triple Gauge Couplings, etc.) leading to significant improvements on the precision achieved by previous experiments. This talk will highlight some of the recent studies performed by ATLAS in the context of new theoritical development and detector performance studies.

TU-P5-3 15h15

FRANCOIS CORRIVEAU, IPP/McGill University

Recent ZEUS Results at HERA

The ZEUS experiment at the HERA accelerator observes collisions of electrons with protons and pursues a wide range of studies on the structure of hadronic matter, QCD and several other phenomena. After the major 2001 upgrade of the HERA luminosity, the new experimental run is underway. The status of the machine will be briefly presented, followed by some of the most recent ZEUS results and an outlook at the long-range measurements.

15h45 Coffee Break / Pause café

TU-P5-4 16h15

Search for the Production of Single Top Quarks in High Energy Proton-Antiprotons Collisions*, **B. Vachon**, DO Experiment, *Fermi National Accelerator Laboratory* — The Top quark, the heaviest of all the known quarks that make up our Universe, was discovered at the Fermi National Accelerator Laboratory in 1995. In high energy proton-antiproton collisions, top quarks are predominantly produced in pairs via the strong interaction. The Standard Model of particle physics also predicts the electroweak production of events containing a single top quark. Due to its small expected cross-section and large background contamination, the production of single top quarks has never been observed. The Fermi National Accelerator Laboratory, near Chicago, is home of the highest energy proton-antiproton collider in the world. The Tevatron collider is the only facility in the world capable of directly producing top quarks. Given the current collision centre-of-mass energy and the considerable data sample foreseen, the production of single top events is expected to be observed for the first time at the Fermi National Accelerator Laboratory. The DO experiment is one of two large multi-purpose detectors recording the results of these high energy proton-antiproton collisions. A brief overview of the DO experiment will be presented. Details of the ongoing data analyses searching for evidence of single top quark production in the current data sample recorded will be discussed. Preliminary results and outlook will be presented.

* This work is being supported by Fermilab.

TU-P5-5 16h30

Measuring the W Boson Mass with CDF in Run IIa, **Oliver Stelzer-Chilton** [1], William Trischuk [1] and Ashutosh Kotwal [2], [1] *University of Toronto* and [2] Duke University — The mass of the W boson is a fundamental parameter of the Standard Model. Through radiative corrections, the mass of the top quark and the W mass are connected to the mass of the Higgs boson, the last missing particle of the Standard Model. As the Higgs boson has not yet been observed experimentally, more precise measurements of the W mass and the top quark mass will further constrain the mass of the Higgs boson. At the Collider Detector at Fermilab (CDF), the W mass can be obtained from a binned maximum likelihood fit to the transverse mass spectrum. Over the last three years CDF has accumulated a high statistics dataset of leptonic W boson decays and we expect an even larger dataset to be collected by the end of this year. Since most of the systematic uncertainties involved scale with available data statistics, a substantial increase in precision on the measured mass can be achieved. This talk will present current studies on the W mass measurement in the muon decay channel and prospects for an improved measurement in Run IIa.

TU-P5-6 16h45

Searches for SUSY at D0*, **Roger Moore**, *University of Alberta* — The Fermilab Tevatron provides proton-antiproton collisions at 1.96 TeV centre-of-mass energy and unparallelled luminosity. The D0 experiment has been collecting data in this environment since early in 2001 and has now accumulated a dataset which exceeds that of previous Tevatron runs. This provides a unique opportunity to search for physics beyond the Standard Model including Supersymmetry (SUSY). I will present the status of SUSY searches at D0 with emphasis on the so-called "golden mode" of tri-lepton signatures of mSUGRA SUSY models.

* This work is being supported by NSERC.

TU-P5-7 17h00

Study of Jet Fragmentation for the Measurement of the Top Mass with CDF, **Simon Sabik**, *University of Toronto* — The measurement of the top quark mass is a vast and important effort in the Collider Detector at Fermilab collaboration. A large number of high energy scientists work on the many instrumental and analytical issues in order to improve this measurement, which will lead to a test of the Standard Model. I will present an overview of the top mass measurement analysis, while keeping an emphasis on the aspects in which I am most directly involved. I will discuss how the study of the fragmentation of jets leads to an improved jet energy calibration, which is crucial to a precise determination of the top quark mass.

TU-P5-8 17h15

Observation of a |S|=1 Baryon State at a Mass of 1.528~GeV in Quasi-real Photoproduction, **Ken Garrow**, *HERMES Collaboration/TRIUMF* — The predictions for exotic baryon states consisting of a five quark structure have existed for some two decades. Up until the past couple of years no evidence of such exotic ($uudd\bar{s}$) baryon configurations had been observed. Recently several photoproduction experiments and an experiment using the K^+ Xe reaction have reported the observation of an exotic baryon state. In the HERMES experiment, using quasi-real photo-production on a deuterium target, a narrow baryon state has been observed in the $pK^0_S \rightarrow p\pi^+\pi^-$ decay channel. The HERMES contribution to the existing world's data set of this exotic baryon, now referred to as the q^+, is the most accurate mass determination and the first indication of a finite width.

17h30 Session Ends / Fin de la session