T 31: QCD IV

Zeit: Donnerstag 16:45–19:00 Raum: HG X

T 31.1 Do 16:45 HG X

Messungen mit den ersten Daten bei LHCb — •Markward Britsch[1], Michael Schmelling[1], Osvaldo Aquines[1], Florin Maciuc[1], Dmitry Popov[1], Mihai-Octavian Dima[1,2], Mikhail Zavertyaev[1,3], Konrad Briggl[1], Peter Schichtel[1] und Nikolai Gagunashvili[1,4] — [1]Max-Planck-Institut für Kernphysik, Heidelberg, Deutschland — [2]Horia Hulubei National Institute of Physics, Bukarest, Rumänien — [3]Lebedev Physical Institute, Moskau, Russland — [4]University of Akureyri, Akureyri, Island

Das LHCb Experiment am Large Hadron Collider (LHC) des CERN ist optimiert für Präzisionsmessungen an B-Mesonen. Die Akzeptanz des Detektors in Pseudorapidität von $\eta = 1{,}6$ bis $\eta = 4{,}9$ ist komplementär zu den anderen großen LHC-Experimenten. Bereits die ersten Daten bei $\sqrt{s} = 0{,}9$, 2,36 oder 7 TeV erlauben es die Teilchenproduktion in Proton-Proton-Kollisionen in einem neuen Energiebereich zu studieren, und damit die gängigen QCD-Modelle zu testen. In diesem Beitrag zeigen wir Beispiele für allein auf der Spurrekonstruktion basierende erste Messungen von verschiedenen Teilchenarten.

T 31.2 Do 17:00 HG X

First measurements of V0 production at LHCb — •Osvaldo Aquines, Markward Britsch, Florin Macuic, Dmitry Popov, and Michael Schmelling — Max Planck Institute for Nuclear Physics, Heidelberg Germany

The first data taken with LHCb are analysed for V0 production in non-diffractive inelastic proton-proton collisions. The analysis is based on tracking information only. First results in the rapidity range 2<y<5 covered by the experiment are presented.

T 31.3 Do 17:15 HG X

Rekonstruktion der Spuren aus den K_s Zerfaellen und erste Signale auf Daten beim LHCb Experiment — •Sascha Stahl für die LHCb Gruppe Physikalisches Institut Heidelberg-Kollaboration — Physikalisches Institut, Heidelberg

Ende letzten Jahres gab es erste Proton-Proton Kollision bei einer Schwerpunktsenergie von 900 GeV am LHC. Schon nach mehreren zehntausend Ereignissen konnten signifikanete K_s Signale im LHCb Detektor rekonstruiert werden. Durch die lange Lebenszeit der K_s Mesonen verlassen ungefaehr 75 % der K_s den Vertex Detektor des LHCb Experiments. In diesem Fall wird ein spezieller Spurfindungs-Algorithmus, der nur die Informationen aus den hinteren Spurdetektoren verwertet, benutzt, um die K_s Mesonen zu rekonstruieren. In diesem Vortrag wird kurz auf diesen Algorithmus zur Spurrekonstruktion von Zerfallsprodukten der K_s Mesonen eingegangen und erste Messungen am LHCb Detektor werden vorgestellt.

T 31.4 Do 17:30 HG X

K0s measurements at ATLAS with the first LHC data — •Thorsten Voss, Grant Gorfine, Thorsten Kuhl, Peter Mättig, and Marcello Barisonzi — Bergische Universität, Wuppertal, Deutschland

This talk will present an analysis, based on the K0s decay into two charged pions. The first part will summarize the K0 reconstruction mechanism, validated and tuned on simulated events. In the second part of the talk results on the K0s, measured at ATLAS in the first LHC data, are shown and compared with monte carlo predictions. In addition mechanisms to understand the detector performance using K0 properties are presented.

T 31.5 Do 17:45 HG X

Exclusive ρ^0 Production from the Recoil Detector at HERMES — •Perez-Benito Roberto Francisco, Dueren Micheal, Hayrapetyan Avetik, Stenzel Hasko, and Yu Weilin — Justus-Liebig-Universität Gießen, II. Physikalisches Institut

The HERMES experiment (HERa MEasurement of Spin) at DESY was originally designed to study the spin structure of the nucleon by inclusive and semi-inclusive deep inelastic scattering. Here, we report about hard exclusive processes that can be described in terms of Generalised Patron Distribution (GPDs). The extraction of beam-charge, beam-helicity and target-spin asymmetries from the accumulated HERMES data allows access to GPD-related information.

In January 2006 a Recoil Detector was installed that surrounded the internal gas target of the HERMES experiment. The HERMES Recoil Detector consisted of three components: a silicon strip detector inside the vacuum, a scintillating fiber tracker and the photon detector with three layers of tungsten and scintillator bars in three different orientations. All three detectors were located inside a solenoidal magnet which provides a 1T longitudinal magnetic field. The detector improves the selection of exclusive events by a direct measurement of the recoiling target nucleon in an intermediate momentum range of 0.1 to 1.4 GeV/c as well as by rejecting non-exclusive background.

The ratio of the cross-sections of ρ^0 meson production between hydrogen and deuterium will provide an insight into the relative contribution to the nucleon cross-section from quarks and gluons.

T 31.6 Do 18:00 HG X

Diffractive J/ψ production at low $W_{\gamma p}$ with the H1 detector at HERA — •Florian Huber — Physikalisches Institut, Universität Heidelberg, Philosophenweg 12, 69120 Heidelberg

Diffractive photoproduction of J/ψ mesons is studied with data taken at the electron-proton collider HERA. In the end of the HERA operation in 2007 the nominal proton beam energy was reduced from 920 GeV to 575 and 460 GeV, respectively. The reduced proton beam energy allows diffractive J/ψ measurements in an extended phase space towards smaller centre of mass energies in the photon proton rest frame, $W_{\gamma p}$. The decay channel used for this analysis is $J/\psi \to e^+e^-$. The tracks of the two decay leptons were online reconstructed using the Fast Track Trigger. Elastic and proton dissociative events are separated using the forward detectors of the H1 experiment. Differential cross sections are presented in t, where t is the squared four-momentum transfer at the proton vertex, and in $W_{\gamma p}$ for low photon virtualities of $Q^2 \leq 1$ GeV in the kinematical phase space region $W_{\gamma p} \geq 20$ GeV and $t \leq -1.2$ GeV^2.

T 31.7 Do 18:15 HG X

Study of the glueball candidate $f_0(1710)$ with the ZEUS detector at HERA — •Vladyslav Libov — DESY, Hamburg, Germany

The production of the scalar resonance $f_0(1710)$, a candidate for the lightest glueball, is measured relatively to the tensor meson $f_2'(1525)$ in electron-proton collisions at HERA. The analysis is based on the data of the ZEUS experiment which were collected in 2004-2007. The dataset corresponds to approximately 380 pb^{-1} integrated luminosity.

The $f_0(1710)$ was reconstructed in the $K_S^0K_S^0$ decay channel. Peaks that could be attributed to the $f_2(1270), a_2(1320)$, $f_2'(1525)$ mesons were also observed in the spectrum. Interference between tensor states was taken into account in the fit to the mass spectrum. Detailed studies show that a simple interference model which worked for $\gamma\gamma$ production with fixed relative amplitudes and phases is not valid. Instead, the interference parameters were determined from the fit. The observed cross-section ratio is

$$\sigma_{rel} = 0.7 \pm 0.1$$

(statistical error only). The result is close to the one obtained by L3 at LEP: $\sigma_{rel} = 0.67 \pm 0.18$. This is in contradiction to the common assumption that the glueball production should be highly suppressed in $\gamma\gamma$-collisions, thus expecting a larger ratio in ep collisions. Hence it is unlikely that the $f_0(1710)$ is a glueball.

T 31.8 Do 18:30 HG X

Studies of $D_1^*(2420)$ and $D_2^*(2460)$ mesons at HERA II. — •Andrii Verbytskyi — ZEUS Experiment, DESY, Notkestr. 85, 22607 Hamburg, Germany

Studies of D meson properties provide important information about the internal structure of matter. One of such studies is the determination of $D_1^*(2420)$ and $D_2^*(2460)$ properties. The masses of these mesons are measured well enough, but some quantities like I, J, P, calculated from quark theory, need to be confirmed. Also, there is no precise data for the decay mode fractions and cross sections of these mesons. So measurement of these quantities will be valuable. The HERA II data taken by the ZEUS detector provide large statistics of D^* decays in several modes with high reconstruction quality. Thus it should be possible to obtain high quality $D_1^*(2420)$ and $D_2^*(2460)$ signals for analysis. In this talk the first steps of this analysis are presented.

T 31.9 Do 18:45 HG X

Charm-Baryon-Spektroskopie bei CDF — Michael Feindt, Michal Kreps, Thomas Kuhr und •Felix Wick — Institut für Experimentelle Kernphysik, KIT

Der Teilchendetektor CDF-II am Tevatron Proton-Antiproton-Beschleuniger ermöglicht dank einer sehr guten Massenauflösung und einer großen Menge verfügbarer Daten die genaue Vermessung von spektroskopischen Eigenschaften wie Masse und Zerfallsbreite einer Vielzahl von Zuständen. Dies wurde ausgenutzt um die ersten orbitalen Anregungen des Λ_c-Baryons, die Resonanzen $\Lambda_c(2595)$ und $\Lambda_c(2625)$, in dem Zerfallskanal $\Lambda_c^+ \pi^+ \pi^-$ sowie dessen Spinanregungen $\Sigma_c(2455)$ und $\Sigma_c(2520)$ in ihren Zerfällen nach $\Lambda_c^+ \pi^-$ und $\Lambda_c^+ \pi^+$ zu untersuchen. Dabei wurde das Λ_c-Baryon aus seinen Zerfallsprodukten $p K^- \pi^+$ rekonstruiert und künstliche neuronale Netzwerke zur Signalselektion eingesetzt. Der resonante Zerfall $\Lambda_c(2595) \to \Sigma_c(2455)\,\pi$ erzeugt eine von der gewöhnlichen Breit-Wigner-Form abweichende Signalstruktur, deren Berücksichtigung in einem niedrigeren Messwert der $\Lambda_c(2595)$-Masse resultiert.