

## Publications of the research group Prof. Ulrich Straumann from 1. January 2005 to 31. March 2006

### Thesis

- *Losses and Depolarization of Stored Ultracold Neutrons on Diamond-like Carbon*  
Peter Fierlinger, PhD Thesis, Universität Zürich, March 2005
- *An optical readout system for the LHCb silicon tracker*  
Achim Vollhardt, PhD Thesis, Universität Zürich, March 2005
- *A search for excited quarks with the H1 detector at HERA*  
Jan Becker, PhD Thesis, Universität Zürich, May 2005
- *Search for Rare Decays of the  $B_s$  Meson with the D0 Experiment*  
Ralf Bernhard, PhD Thesis, Universität Zürich, October 2005
- *Large Area Silicon Tracking Detectors with Fast Signal Readout for the Large Hadron Collider (LHC) at CERN*  
Stephan Köstner, PhD Thesis, Universität Zürich and TU Wien, October 2005

### Conference contributions and invited seminars

#### on HERA results

- *Prompt Photons in DIS*  
Carsten Schmitz, Frühjahrstagung 2006 der Deutschen Physikalischen Gesellschaft e.V. - Fachverband Teilchenphysik, Dortmund, Deutschland, 28. - 31. März 2006
- *Single top production in ep collisions at HERA*  
Stefania Xella Hansen, TOP 2006, International workshop on Top Quark Physics, Jan 12-15, 2006, University of Coimbra, Portugal
- *Search for leptoquarks and lepton flavor violation at the H1 experiment*  
Linus Lindfeld, 13th International Workshop on Deep Inelastic Scattering (DIS 05), Madison, Wisconsin, 27 Apr - 1 May 2005.

#### on B physics

- *Flavor-changing neutral current charm and bottom decays at the Tevatron*  
Frank Lehner, International Workshop on Discoveries in Flavour Physics At  $e^+e^-$  Colliders, February 28 - March 03, 2006, Frascati, Italy.
- *New Results from Rare B Decays at Hadron Colliders*  
Frank Lehner, 20th International Workshop on Weak Interactions and Neutrinos (WIN '05), June 06-11, 2005, Delphi, Greece

- *Heavy Flavor Rare Decays at  $D\bar{O}$*   
Ralf Bernhard, Frontiers in Contemporary Physics III, 23-28 May 2005, Nashville, USA.
- *Search for rare flavor-changing and penguin decays of the  $B_s^0$  meson with the  $D\bar{O}$  detector*  
Ralf Bernhard, APS Spring Meeting in Tampa, April 16-19, 2005

### on experimental techniques

- *The LHCb Silicon Tracker*  
D. Volyanskyy, Annual Swiss Physical Society meeting 2006, Feb. 14, 2006, Lausanne, Switzerland
- *Silicon Detectors for the CMS and LHCb Experiment*  
T. Sakhelashvili, invited seminar, Institute for High Energy Physics, Tbilisi State University, Dec. 21, 2005 and Physic Faculty of Tbilisi State University, Jan. 16, 2006
- *Heavy flavour tagging at the ILC: where are we?*  
Stefania Xella, ECFA study on Physics and Detectors for the International Linear Collider: 3rd workshop. ParkHotel Schnbrunn, Nov 14-17, 2005, Vienna, Austria
- *Long Ladder Performance*  
O. Steinkamp, 14th International Workshop on Vertex Detectors, Chuzenji Lake, Nikko, Japan, November 7-11, 2005
- *The Status of the LHCb Silicon Tracker*  
Frank Lehner, 9th ICATPP Conference on Astroparticle, Particle, Space Physics, Detectors and Medical Physics Applications, October 14-17, 2005, Como, Italy
- *Hybrid Design, Procurement and Testing for the LHCb Silicon Tracker*  
Frank Lehner, 11th Workshop on Electronics for LHC and future Experiments, September 12-16, 2005, Heidelberg, Germany
- *Production of the LHCb Silicon Tracker Readout Electronics*  
Achim Vollhardt, 11th Workshop on Electronics for LHC and future Experiments, 12.-16.September 2005, Heidelberg, Germany
- *A radiation tolerant fibre optic readout system for the LHCb Silicon Tracker*  
Achim Vollhardt, 10th European Symposium on Semiconductor Detectors, 12.-16.Juni 2005, Wildbad Kreuth, Germany
- *Status and prospects of the LHCb experiment*  
U. Straumann, Seminar at Geneva University, 13. April 2005
- *Diamond-Like Carbon for Ultracold Neutrons*  
P. Fierlinger et al., PANIC05, Santa Fe, NM, USA, Oktober 2005.
- *Deuterium for Ultracold Neutron Sources*  
P. Fierlinger et al., PANIC05, Santa Fe, NM, USA, Oktober 2005.
- *Diamond-like carbon coatings for Ultracold Neutron applications*  
S. Heule et al., Diamond 2005, Toulouse, France, 16.-21.September.2005.

- *Diamond-like carbon for Ultracold Neutron applications'*  
S. Heule et al., Annual Meeting of the Swiss Physics Society SPG, Bern, 14. July 2005.
- *Loss and Depolarisation Studies of Ultracold Neutrons on Diamond Surfaces*  
P. Fierlinger, et al., Annual Meeting of the Swiss Physics Society SPG, Bern, 14. July 2005.
- *Loss and Depolarization Studies of Ultra-cold Neutrons*  
P. Fierlinger, et al., Frhjahrstagung der DPG, FV Hadronen und Kerne, Berlin, March 2005.
- *Diamond-like carbon for Ultracold Neutron applications*  
S. Heule, et al., Frhjahrstagung der DPG, FV Hadronen und Kerne, Berlin, March 2005.
- *Measurement of the Loss and Depolarization Probability of UCN on Beryllium and Diamond Like Carbon Films*  
P. Fierlinger, S. Heule, U. Straumann et al., Int. Conf. on Precision Measurements with Slow Neutrons NIST, USA, 2004, J. Res. Natl. Inst. Stand. Technol. 110 (2005) 279.
- *Magnetic Field Stabilization for Magnetically Shielded Volumes by External Field Coils*  
P. Fierlinger et al., Int. Conf. on Precision Measurements with Slow Neutrons NIST, USA, 2004, J. Res. Natl. Inst. Stand. Technol. 110 (2005) 173.

## Collaboration notes for D0 and LHCb

LHCb notes can be accessed through the CERN document server on <http://cdsweb.cern.ch/>

- *Performance Studies of the Silicon Strip Detectors of the LHCb Silicon Tracker*  
Proceedings IWORID 2005, Glasgow, Jul 25-29, 2005 S.Köstner et al., LHCb-2005-080
- *Design and Performance of the LHCb Silicon Tracker*  
Proceedings TIME 2005, Zürich, Oct 4-7, 2005 K.Vervink et al., LHCb-2005-102
- *Performance of Long Ladders for the LHCb Silicon Tracker*  
Proceedings VERTEX 2005, Chuzenji Lake, Nikko, Nov 7-11, 2005 O.Steinkamp et al., LHCb-2005-103
- *Production of the LHCb Silicon Tracker Readout Electronics*  
Proceedings LECC 2005, Heidelberg, Sep 12-16, 2005 A.Vollhardt et al., LHCb-2005-064
- *Hybrid Design, Procurement and Testing for the LHCb Silicon Tracker*  
Proceedings LECC 2005, Heidelberg, Sep 12-16, 2005 A.Bay et al., LHCb-2005-061
- *Pre-Series Sensor Qualification for the Inner Tracker of LHCb*  
G.Baumann et al., LHCb-2005-037
- *Silicon Sensor Probing and Radiation Studies for the LHCb Silicon Tracker*  
Proceedings European Symposium on Semiconductor Detectors, Wildbad Kreuth, Jun 12-16, 2005 C.Loic et al., LHCb-2005-033
- *A radiation tolerant fiber-optic readout system for the LHCb Silicon Tracker*  
Proceedings European Symposium on Semiconductor Detectors, Wildbad Kreuth, Jun 12-16, 2005 A.Vollhardt et al., LHCb-2005-032
- *Noise Considerations for the Beetle Amplifier Used With Long Silicon Strip Detectors*  
S.Koestner and U.Straumann, LHCb-2005-029
- *Material Budget Calculation for the LHCb TT Station*  
Needham, M; Wenger, A, LHCb-2005-020
- *Mechanical Characterization of a TT Half-Module Prototype*  
G. Baumann et al., LHCb-2005-007
- *Updated Occupancies for the LHCb Inner Tracker*  
Needham, M., LHCb-2005-006
- *Update on the upper limit for the rare decay  $B_s^0 \rightarrow \mu^+ \mu^+$  with the D0 detector*  
R. Bernhard and F. Lehner, D0-note 4696, January 2005
- *Sensitivity Analysis of the rare decay  $B_s^0 \rightarrow \mu^+ \mu^- \phi$  with the D0 detector*  
R. Bernhard and F. Lehner, D0-note 4695, January 2005

## Articles with the D0 Collaboration

- “*First direct two-sided bound on the  $B_s^0$  oscillation frequency*”  
V. Abazov [D0 Collaboration], arXiv:hep-ex/0603029
- “*Averages of b-hadron properties at the end of 2005*”  
E. Barberio *et al.*, hep-ex/0603003.
- “*Search for pair production of second generation scalar leptoquarks in p anti-p collisions at  $\sqrt{s} = 1.96$  TeV*”  
V. M. Abazov *et al.* [D0 Collaboration], arXiv:hep-ex/0601047
- “*Measurement of the isolated photon cross section in p anti-p collisions at  $\sqrt{s} = 1.96$  TeV*”  
V. M. Abazov *et al.* [D0 Collaboration], arXiv:hep-ex/0511054
- “*A Combination of CDF and DØ Limits on the Branching Ratio of  $B_{s(d)}^0 \rightarrow \mu^+ \mu^-$  Decays*”  
R. Bernhard *et al.* , arXiv:hep-ex/0508058
- “*Search for the Higgs boson in  $H \rightarrow W W^{(*)}$  decays in p anti-p collisions at  $\sqrt{s} = 1.96$  TeV*”  
V. M. Abazov *et al.* [D0 Collaboration], Phys. Rev. Lett. 96, 011801 (2006), [arXiv:hep-ex/0508054]
- “*The upgraded DØ detector*”  
V. M. Abazov *et al.* [D0 Collaboration], arXiv:physics/0507191
- “*Measurement of the lifetime difference in the  $B_s^0$  system*”  
V. M. Abazov *et al.* [D0 Collaboration], Phys. Rev. Lett. 95, 171801 (2005), [arXiv:hep-ex/0507084]
- “*Measurement of semileptonic branching fractions of B mesons to narrow  $D^{**}$  states*”  
V. M. Abazov *et al.* [D0 Collaboration], Phys. Rev. Lett. 95, 171803 (2005), [arXiv:hep-ex/0507046]
- “*Search for large extra spatial dimensions in dimuon production at DØ*”  
V. M. Abazov *et al.* [D0 Collaboration], Phys. Rev. Lett. 95, 161602 (2005), [arXiv:hep-ex/0506063]
- “*Measurement of the t anti-t production cross section in p anti-p collisions at  $\sqrt{s} = 1.96$  TeV in dilepton final states*”  
V. M. Abazov *et al.* [D0 Collaboration]  
Phys. Lett. B 626, 55 (2005), [arXiv:hep-ex/0505082]
- “*Search for single top quark production in p anti-p collisions at  $\sqrt{s} = 1.96$  TeV*”  
V. M. Abazov *et al.* [D0 Collaboration], Phys. Lett. B 622, 265 (2005), [arXiv:hep-ex/0505063]
- “*Measurement of the W boson helicity in top quark decays*”  
V. M. Abazov *et al.* [D0 Collaboration], Phys. Rev. D 72, 011104 (2005), [arXiv:hep-ex/0505031]
- “*Search for Randall-Sundrum gravitons in dilepton and diphoton final states*”  
V. M. Abazov *et al.* [D0 Collaboration], Phys. Rev. Lett. 95, 091801 (2005), [arXiv:hep-ex/0505018]
- “*Measurement of the t anti-t production cross section in p anti-p collisions at  $\sqrt{s} = 1.96$  TeV using lepton + jets events with lifetime b-tagging*”  
V. M. Abazov *et al.* [D0 Collaboration], Phys. Lett. B 626, 35 (2005), [arXiv:hep-ex/0504058]
- “*Measurement of the t anti-t production cross section in p anti-p collisions at  $\sqrt{s} = 1.96$  TeV using kinematic characteristics of lepton + jets events*”  
V. M. Abazov *et al.* [D0 Collaboration], Phys. Lett. B 626, 45 (2005), [arXiv:hep-ex/0504043]

- “Search for supersymmetry via associated production of charginos and neutralinos in final states with three leptons”  
V. M. Abazov *et al.* [D0 Collaboration], Phys. Rev. Lett. 95, 151805 (2005), [arXiv:hep-ex/0504032]
- “Production of  $W Z$  events in  $p$  anti- $p$  collisions at  $\sqrt{s} = 1.96$  TeV and limits on anomalous  $W W Z$  couplings”  
V. M. Abazov *et al.* [D0 Collaboration], Phys. Rev. Lett. 95, 141802 (2005), [arXiv:hep-ex/0504019]
- “Search for neutral supersymmetric Higgs bosons in multijet events at  $\sqrt{s} = 1.96$  TeV”  
V. M. Abazov *et al.* [D0 Collaboration], Phys. Rev. Lett. 95, 151801 (2005), [arXiv:hep-ex/0504018]
- “Measurement of the  $p$  anti- $p \rightarrow W$  gamma +  $X$  cross section at  $\sqrt{s} = 1.96$  TeV and  $W W$  gamma anomalous coupling limits”  
V. M. Abazov *et al.* [D0 Collaboration], Phys. Rev. D 71, 091108 (2005) [arXiv:hep-ex/0503048]
- “Study of  $Z$  gamma events and limits on anomalous  $Z Z$  gamma and  $Z$  gamma gamma couplings in  $p$  anti- $p$  collisions at  $\sqrt{s} = 1.96$  TeV”  
V. M. Abazov *et al.* [D0 Collaboration], Phys. Rev. Lett. 95, 051802 (2005), [arXiv:hep-ex/0502036]
- “Measurement of inclusive differential cross sections for Upsilon(1S) production in  $p$  anti- $p$  collisions at  $\sqrt{s} = 1.96$  TeV”  
V. M. Abazov *et al.* [D0 Collaboration], Phys. Rev. Lett. 94, 232001 (2005), [arXiv:hep-ex/0502030]
- “Search for first-generation scalar leptoquarks in  $p$  anti- $p$  collisions at  $\sqrt{s} = 1.96$  TeV”  
V. M. Abazov *et al.* [D0 Collaboration], Phys. Rev. D 71, 071104 (2005), [arXiv:hep-ex/0412029]
- “First measurement of  $\sigma(p$  anti- $p \rightarrow Z) \times Br(Z \rightarrow \text{tau tau})$  at  $\sqrt{s} = 1.96$  TeV”  
V. M. Abazov *et al.* [D0 Collaboration], Phys. Rev. D 71, 072004 (2005), [arXiv:hep-ex/0412020]
- “A search for anomalous heavy-flavor quark production in association with  $W$  bosons”  
V. M. Abazov *et al.* [D0 Collaboration], Phys. Rev. Lett. 94, 152002 (2005), [arXiv:hep-ex/0411084]
- “A measurement of the ratio of inclusive cross sections  $\sigma(p p \rightarrow Z + b\text{-jet})/\sigma(p p \rightarrow Z + \text{jet})$  at  $\sqrt{s} = 1.96$  TeV”  
V. M. Abazov *et al.* [D0 Collaboration], Phys. Rev. Lett. 94, 161801 (2005), [arXiv:hep-ex/0410078]
- “Measurement of the  $W W$  production cross section in  $p$  anti- $p$  collisions at  $\sqrt{s} = 1.96$  TeV”  
V. M. Abazov *et al.* [D0 Collaboration], Phys. Rev. Lett. 94, 151801 (2005), [arXiv:hep-ex/0410066]
- “A search for  $W b$  anti- $b$  and  $W H$  production in  $p$  anti- $p$  collisions at  $\sqrt{s} = 1.96$  TeV”  
V. M. Abazov *et al.* [D0 Collaboration], Phys. Rev. Lett. 94, 091802 (2005) [arXiv:hep-ex/0410062]
- “Measurement of the  $\Lambda/B^0$  lifetime in the decay  $\Lambda/B^0 \rightarrow J/\psi \Lambda^0$  with the  $D\phi$  detector”  
V. M. Abazov *et al.* [D0 Collaboration], Phys. Rev. Lett. 94, 102001 (2005) [arXiv:hep-ex/0410054]

- “Measurement of the ratio of  $B^+$  and  $B^0$  meson lifetimes”  
V. M. Abazov *et al.* [D0 Collaboration], Phys. Rev. Lett. 94, 182001 (2005) [arXiv:hep-ex/0410052]
- “A search for the flavor-changing neutral current decay  $B_s^0 \rightarrow \mu^+ \mu^-$  in  $p$  anti- $p$  collisions at  $\sqrt{s} = 1.96$  TeV with the DØdetector”  
V. M. Abazov *et al.* [D0 Collaboration], Phys. Rev. Lett. 94, 071802 (2005) [arXiv:hep-ex/0410039]
- “Measurement of the  $B_s^0$  lifetime in the exclusive decay channel  $B_s^0 \rightarrow J/\psi \phi$ ”  
V. M. Abazov *et al.* [D0 Collaboration], Phys. Rev. Lett. 94, 042001 (2005), [arXiv:hep-ex/0409043]
- “Measurement of dijet azimuthal decorrelations at central rapidities in  $p$  anti- $p$  collisions at  $\sqrt{s} = 1.96$  TeV”  
V. M. Abazov *et al.* [D0 Collaboration], Phys. Rev. Lett. 94, 221801 (2005) [arXiv:hep-ex/0409040]
- “Search for supersymmetry with gauge-mediated breaking in diphoton events at DØ”  
V. M. Abazov *et al.* [D0 Collaboration], Phys. Rev. Lett. 94, 041801 (2005), [arXiv:hep-ex/0408146]

## Articles with the H1 collaboration

- *Measurement of Prompt Photon Cross Sections in Photoproduction at HERA*  
A. Aktas et al. (H1-Collaboration), Eur. Phys. J. C38 (2005), 437-445
- *Inclusive Production of  $D^+$ ,  $D^0$ ,  $D_s^+$  and  $D^{*+}$  Mesons in Deep Inelastic Scattering at HERA*  
A. Aktas et al. (H1-Collaboration), Eur. Phys. J. C38 (2005), 447 -459
- *Measurement of  $F_2^{c\bar{c}}$  and  $F_2^{b\bar{b}}$  at High  $Q^2$  using the H1 Vertex Detector at HERA*  
A. Aktas et al. (H1-Collaboration), Eur. Phys. J. C40 (2005), 349 -359
- *A Direct Search for Magnetic Monopoles Produced in Positron-Proton Collisions at HERA*  
A. Aktas et al. (H1-Collaboration), Eur. Phys. J. C41 (2005), 133 - 141
- *Search for Light Gravitinos in Events with Photons and Missing Transverse Momentum at HERA*  
A. Aktas et al. (H1-Collaboration), Phys. Lett. B616 (2005), 31 - 42
- *Measurement of Dijet Cross Sections in  $ep$  Interactions with a Leading Neutron at HERA*  
A. Aktas et al. (H1-Collaboration), Eur. Phys. J. C41 (2005), 273 - 286
- *Measurement of Beauty Production at HERA Using Events with Muons and Jets*  
A. Aktas et al. (H1-Collaboration), Eur. Phys. J. C41 (2005), 453 - 467
- *Measurement of Charm and Beauty Photoproduction at HERA Using  $D^*\mu$  Correlations*  
A. Aktas et al. (H1-Collaboration), Phys. Lett. B621 (2005), 56 - 71
- *Measurement of Deeply Virtual Compton Scattering*  
A. Aktas et al. (H1-Collaboration), Eur. Phys. J. C44 (2005), 1 - 11
- *Search for Leptoquark Bosons in  $ep$  Collisions at HERA*  
A. Aktas et al. (H1-Collaboration), Phys. Lett. B629 (2005), 9 - 19
- *A Determination of Electroweak Parameters at HERA*  
A. Aktas et al. (H1-Collaboration), Phys. Lett. B632 (2006), 35 - 42
- *Measurement of  $F_2^{cc}$  and  $F_2^{bb}$  at Low  $Q^2$  Using the H1-vertex Detector at HERA*  
A. Aktas et al. (H1-Collaboration), Eur. Phys. J. C45 (2006), 23 -33
- *First Measurement of Charged Current Cross Sections at HERA with Longitudinally Polarized Positrons*  
A. Aktas et al., Phys.Lett. B634 (2006), 173 - 179
- *Forward Jet Production in Deep Inelastic Scattering at HERA*  
A. Aktas et al. (H1-Collaboration), Eur. Phys. J. C (2006), in print
- *Elastic  $J/\Psi$  Production at HERA*  
A. Aktas et al. (H1-Collaboration), Eur. Phys. J. C (2006), in print
- *Measurement of Event Shape Variables in Deep Inelastic Scattering at HERA*  
A. Aktas et al. (H1-Collaboration), Eur. Phys. J. C (2006), in print



- *Photoproduction of Dijets with High Transverse Momenta at HERA*  
A. Aktas et al. (H1-Collaboration), submitted to Phys. Lett. B (2006)
- *Diffractive Photoproduction of  $\rho$  Mesons with High Transverse Momenta at HERA*  
A. Aktas et al. (H1-Collaboration), submitted to Phys. Lett. B (2006)

## Articles on Ultracold Neutrons

- *Measured total cross sections of slow neutrons scattered by solid deuterium and implications for ultracold neutron sources*  
S. Heule, P. Fierlinger et al., Phys. Rev. Lett. 95, 182502 (2005).
- *First storage of ultracold neutrons in a volume formed of foils coated with diamond-like Carbon*  
P. Fierlinger, S. Heule, U. Straumann et al. Phys. Lett. B 625, 19 (2005).
- *Measured total cross section of slow neutrons scattered by gaseous and liquid  $2H_2$*   
P. Fierlinger et al., Phys. Rev. Lett.94, 212502 (2005).
- *Production of ultra-cold neutrons from a cold neutron beam on a  $2H_2$  target*  
P. Fierlinger, S. Heule et al., Phys. Rev. C 71, 054601 (2005).
- *The simulation of ultracold neutron experiments using GEANT4*  
P. Fierlinger et al., Nucl. Instr. Meth. A 552 (2005) 513-521
- *Magnetron-sputtered Be coatings as reflectors for ultracold neutrons*  
P. Fierlinger et al., Nucl. Instr. Meth. A 551 (2005) 429-447
- *Magnetic Field Stabilization by a Helmholtz-like Coil Configuration*  
P. Fierlinger et al., Nucl. Instr. Meth. A 554 (2005) 527-539.
- *A novel apparatus for the investigation of material properties for the storage of ultracold neutrons*  
P. Fierlinger, U. Straumann et al., Nucl. Instr. Meth. A 550, 637 (2005).
- *On the use of lead/tin alloys as target material for the production of spallation neutrons*  
P. Fierlinger et al., Nucl. Instr. Meth. A, 539, 3, 1, 646-653 (2005).