

## 18 Publications

### 18.1 Research group of Prof. C. Amsler

#### Articles

- *A new measurement of the  $\bar{\nu}_e e^-$  elastic cross section at very low energy*  
C. Amsler et al. (MUNU collaboration), Phys.Lett.B 545 (2002) 57.
- *Sub MeV particles detection and identification in the MUNU detector*  
M. Avenier et al. (MUNU collaboration), Nucl.Instr.Meth.A 482 (2002) 408.
- *Production and detection of cold antihydrogen atoms*  
M. Amoretti et al. (ATHENA collaboration), Nature 419 (2002) 456.
- *Non- $q\bar{q}$  mesons*  
C. Amsler, Phys.Rev.D 66 (2002) 010001-754.
- *The  $\eta(1440)$ ,  $f_1(1420)$ , and  $f_1(1510)$*   
M. Aguilar-Benitez, C. Amsler and A. Masoni, Phys.Rev.D 66 (2002) 010001-493.
- *Comment on "Protonium annihilation into  $\pi^0\pi^0$  at rest in a liquid hydrogen target"*  
C. Amsler et al. (Crystal Barrel collaboration), Phys.Rev.D 66 (2002) 058101.
- *Further evidence for a large glue component in the  $f_0(1500)$  meson*  
C. Amsler, Phys.Lett.B 541 (2002) 22.
- *Review of Particle Physics*  
K. Hagiwara et al. (Particle Data Group), Phys.Rev.D 66 (2002) 010001.
- *Particle data booklet*  
K. Hagiwara et al. (Particle Data Group), AIP pub. 72 (2002).
- *Upgrade of the ATHENA Detector with Avalanche Photodiodes and Quantum Efficiency Measurements at Cryogenic Temperatures*  
A. Glauser, Diplomarbeit, Universität Zürich, 2003.
- *A high resolution silicon beam telescope*  
C. Amsler et al., Nucl.Instr.Meth.A 480 (2002) 501.
- *Temperature dependence of pure CsI: scintillation light yield and decay time*  
C. Amsler et al., Nucl.Instr.Meth.A 480 (2002) 494.
- *Meson Resonances in Proton-Antiproton Annihilation*  
C. Amsler, Proc. Int. Conf. on the Structure and Interactions of the Photon (PHOTON 2001), Ascona, World Scientific (2001) 253.
- *The Atlas and CMS trackers*  
T. Speer, Proc. 5th Int. Conf. on Hyperons, Charm and Beauty Hadrons, Vancouver (2002), Nucl.Phys.B (Proc. Suppl.) 115 (2003) 318 .
- *Tracking in CMS : software framework and tracker performance*  
A.I. Khanov, M. Lenzi, T. Todorov, T. Speer, P. Vanlaer and M. Winkler, Nucl.Instr.Meth.A 478 (2002) 460.

**Articles in press**

- *Annihilation at rest of antiprotons and protons into neutral particles*  
C. Amsler et al. (Crystal Barrel Collaboration), Phys.Lett.B.
- *Positron plasma diagnostics and temperature control for antihydrogen production*  
M. Amoretti et al. (ATHENA collaboration), Phys.Rev.Lett.
- *Light exotic mesons*  
C. Amsler, Proc. Quark Confinement and the Hadron Spectrum V, Gargnano, 2002, World Scientific.
- *A cryogenic silicon microstrip and pure-CsI detector for detection of antihydrogen annihilations*  
C. Regenfus, Proc. Int. Workshop (Vertex 2001), Brunnen, Nucl.Instr.Meth.A.
- *Detection of antihydrogen annihilations with a cryogenic pure-CsI detector*  
C. Regenfus, C. Amsler, A. Glauser, D. Grögler, D. Lindelf, H. Pruys, Proc. of "New developments in photodetection", Beaune 2002, Nucl.Instr.Meth.A.
- *Development of APD readout for pure-CsI crystals at cryogenic temperatures*  
A. Glauser, Proc. of "New developments in photodetection", Beaune 2002, Nucl.Instr.Meth.A.
- *New Developments in Vertex Reconstruction for CMS*  
R. Frühwirth, K. Prokofiev, T. Speer, P. Vanlaer and W. Waltenberger, Nucl.Instr.Meth.A.

**Invited lectures**

- C. Amsler: *New results in proton-antiproton annihilation and the status of glueballs*  
Seminar, Università di Genova, 19.4.02.
- C. Amsler: *The spectrum of light quark-antiquark mesons*  
Università degli Studi di Pavia, 17.4, 18.4 and 23.4.02.
- C. Amsler: *New results in proton-antiproton annihilation and the status of glueballs*  
Seminar, Helsinki University, 27.8.02.
- C. Amsler: *Light exotic mesons*  
Invited talk, Quark Confinement and the Hadron Spectrum V, Gargnano, 12.9.02.
- C. Amsler: *Experimental evidence for a large glue content in the  $f_0(1500)$  meson*  
Invited talk, Aspects of confinement and nonperturbative QCD, ECT\* Center, Trento, 14.3.03.
- C. Amsler: *Glueballs and other exotic mesons*  
Seminar, Universität Basel, 16.01.03.
- O. Link: *The MUNU experiment*  
Contributed talk, Workshop on large TPC for low energy rare event detection, 5.12.02.
- N. Madsen: *First production of cold antihydrogen*  
Seminar, Center for Ultracold Atoms, MIT, Cambridge, USA, 15.10.02.

- C. Regenfus: *Detection of antihydrogen atoms in the ATHENA experiment with a cold Si- $\mu$ -strip and pure CsI detector*  
Seminar, PSI, 26.4.02.
- C. Regenfus: *First production and detection of cold antihydrogen*  
Seminar, Universität Basel, 31.10.02.
- C. Regenfus: *Production of cold antihydrogen atoms in large quantities*  
Plenary talk, Frühjahrstagung der DPG, Aachen, 13.03.03.
- T. Speer: *The ATLAS and CMS Trackers*  
Invited talk, 5th Int. Conf. on Hyperons, Charm and Beauty Hadrons, Vancouver, 28.06.03.

### **ATHENA Collaboration (2002)**

M. Amoretti, C. Amsler, G. Bonomi, A. Bouchta, P. Bowe, C. Carraro, C. L. Cesar, M. Charlton, M. J. T. Collier, M. Doser, V. Filippini, K. S. Fine, A. Fontana, M. C. Fujiwara, R. Funakoshi, P. Genova, J. S. Hangst, R. S. Hayano, M. H. Holzscheiter, L. V. Joergensen, V. Lagomarsino, R. Landua, D. Lindelöf, E. Lodi Rizzini, M. Macri, N. Madsen, G. Manuzio, M. Marchesotti, P. Montagna, H. Pruys, C. Regenfus, P. Riedler, J. Rochet, A. Rotondi, G. Rouleau, G. Testera, A. Variola, T. L. Watson, D. P. van der Werf

### **MUNU Collaboration (2002)**

C. Amsler, M. Avenier, C. Broggin, J. Busto, C. Cernac, Z. Daraktchieva, G. Gervasio, P. Jeanneret, G. Jonkmans, D.H. Koang, J. Lamblin, D. Lebrun, O. Link, F. Ould-Saada, G. Puglierin, A. Stutz, A. Tadsen, J.L. Vuilleumier

### **CRYSTAL BARREL Collaboration (2002)**

C. Amsler, C. A. Baker, B. M. Barnett, C. J. Batty, M. Benayoun, P. Blüm, K. Braune, D. V. Bugg, T. Case, V. Credé, K. M. Crowe, M. Doser, W. Dünneweber, D. Engelhardt, M. A. Faessler, R. P. Hadcock, F. H. Heinsius, M. Heinzelmann, N. P. Hessey, P. Hidas, D. Jamnik, H. Kalinowsky, P. Kammel, J. Kisiel, E. Klempt, H. Koch, M. Kunze, U. Kurilla, R. Landua, H. Matthäy, C. A. Meyer, F. Meyer-Wildhagen, R. Ouared, K. Peters, B. Pick, M. Ratajczak, C. Regenfus, J. Reinnarth, W. Roethel, A. Sarantsev, S. Spanier, U. Strobusch, M. Suffert, J. S. Suh, U. Thoma, I. Uman, S. Wallis-Plachner, D. Walther, U. Wiedner, K. Wittmack, and B. S. Zou

### **PARTICLE DATA Group (2002)**

K. Hagiwara, K. Hikasa, K. Nakamura, M. Tanabashi, M. Aguilar-Benitez, C. Amsler, R.M. Barnett, P.R. Burchat, C.D. Carone, C. Caso, G. Conforto, O. Dahl, M. Doser, S. Eidelman, J.L. Feng, L. Gibbons, M. Goodman, C. Grab, D.E. Groom, A. Gurtu, K.G. Hayes, J.J. Hernandez-Rey, K. Honscheid, C. Kolda, M.L. Mangano, D.M. Manley, A.V. Manohar, J. March-Russell, A. Masoni, R. Miquel, K. Mönig, H. Murayama, S. Navas, K.A. Olive, L. Pape, C. Patrignani, A. Piepke, M. Roos, J. Terning, N.A. Törnqvist, T.G. Trippe, P. Vogel, C.G. Wohl, R.L. Workman, W.-M. Yao

## 18.2 Research group of Prof. H. Keller

### Articles

- *Oxygen isotope effect of the plane-copper NQR frequency in  $YBa_2Cu_4O_8$*   
M. Mali, J. Roos, H. Keller, J. Karpinski, K. Conder, Phys.Rev.B **65**, 184518-1-6 (2002).
- *Temperature and field dependence of the anisotropy of  $MgB_2$*   
M. Angst, R. Puzniak, A. Wisniewski, J. Jun, S.M. Kazakov, J. Karpinski, J. Roos, H. Keller, Phys.Rev.Lett.**88**, 167004-1-4 (2002).
- *Competition between anisotropy and superconductivity in organic and cuprate superconductors*  
T. Schneider, Europhys. Lett. **60**, 141-147 (2002).
- *On the magnetic and superconducting properties of  $Ru_{1-x}Sr_2RECu_{2+x}O_{8-\delta}$ ,  $RE=Gd, Eu$ , compounds*  
P.W. Klamut, B. Dabrowski, S.M. Mini, S. Kolesnik, M. Maxwell, A. Shengelaya, R. Khasanov, H. Keller, I. Savic, C. Sulkowski, M. Matusiak, A. Wisniewski, R. Puzniak, and I. Fita, J. Appl. Phys. **91**, 7134-7136 (2002).
- *Superconductivity and Magnetism in Pure and Substituted  $RuSr_2GdCu_2O_8$*   
B. Dabrowski, P.W. Klamut, M. Maxwell, S.M. Mini, S. Kolesnik, J. Mais, A. Shengelaya, R. Khasanov, H. Keller, C. Sulkowski, D. Wlosewicz, M. Matusiak, J. Supercond. **15**, 439-445 (2002).
- *Clues obtained from the oxygen isotope effect on NMR/NQR parameters Observed in  $YBa_2Cu_4O_8$*   
M. Mali, J. Roos, H. Keller, A.V. Dooglav, Y.A. Sakhratov, A.V. Savinkov, J. Supercond. **15**, 511-515 (2002).
- *Vortex motion in type-II superconductors probed by muon spin rotation and small-angle neutron scattering*  
D. Charalambous, P.G. Kealey, E.M. Forgan, T.M. Riseman, M.W. Long, C. Goupil, R. Khasanov, D. Fort, P.J.C. King, S.L. Lee, and F. Ogrin, Phys.Rev.B**66**, 054506-1-4, (2002).
- *On the macroscopic s- and d-wave symmetry in cuprate superconductors*  
K.A. Müller, Philosophical Magazine **82**, 279-288 (2002).
- *High-temperature superconductors: Results and relations*  
K.A. Müller, Appl. Phys. **A** 74 [Suppl.], S1641S1644 (2002).
- *Implantation studies of keV positive muons in thin metallic layers*  
E. Morenzoni, H. Glöckler, T. Prokscha, R. Khasanov, H. Luetkens, M. Birke, E.M. Forgan, Ch. Niedermayer, and M. Pleines, Nucl.Instr.Meth.B**192**, 254 266 (2002).
- *Oxygen stoichiometry and isotope effect in  $La_{1-x}Ca_xMnO_{3+\delta}$*   
K. Conder, Guo-meng Zhao, R. Khasanov, Phys.Rev.B**66**, 212409-1-4 (2002).
- *Oxygen-isotope effects on local structure distortions and transport properties of epitaxial thin films of  $Nd_{0.67}Sr_{0.33}MnO_3$*   
R.P. Sharma, Guo-meng Zhao, D.J. Kang, M. Robson, H. Keller, H.D. Drew, T. Venkatesan, Phys.Rev.B **66**, 214411-1-4 (2002).

- *Superparamagnetism in Heterogeneous AgFe thin films - A Low Energy SR Study*  
T.J. Jackson, E.M. Forgan, T.M. Riseman, H. Glückler, E. Morenzoni, T. Prokscha, H.P. Weber, Ch. Niedermayer, M. Pleines, G. Schatz, J. Litterst, H. Luetkens, H. Keller, R. Khasonov, T.S. Rong, C. Binns, *Hyperfine Interactions* **136/137**, 403-408 (2002).
- *Influence of Impurities on Short Range Electron Transport in GaAs*  
D.G. Eshchenko, V.G. Storchak, J.H. Brewer, and R.L. Lichti, *Phys.Rev.Lett.* **89**, 226601 (2002).
- *Excess electron transport and delayed muonium formation in condensed rare gases*  
D.G. Eshchenko, V.G. Storchak, J.H. Brewer, G.D. Morris, S.P. Cottrell, and S.F.J. Cox, *Phys.Rev.B* **66**, 035105 (2002).
- *Anisotropy of the superconducting state properties and phase diagram of MgB<sub>2</sub> by torque magnetometry on single crystals*  
M. Angst, R. Puzniak, A. Wisniewski, J. Roos, H. Keller, P. Miranović, J. Jun, S.M. Kazakov, J. Karpinski, *Physica C* **385**, 143-153 (2003).
- *The oxygen-isotope effect on the in-plane penetration depth in underdoped Y<sub>1-x</sub>Pr<sub>x</sub>Ba<sub>2</sub>Cu<sub>3</sub>O<sub>7-δ</sub> as revealed by muon-spin rotation*  
R. Khasanov, A. Shengelaya, K. Conder, E. Morenzoni, I.M. Savić, and H. Keller, *J. Physics: Condens. Matter*, **15**, L17-L23 (2003).
- *Unconventional isotope effects in cuprate high-temperature superconductors*  
H. Keller, *Physica B* **326**, 283-288 (2003).
- *Low energy muons as probes of thin films and near surface regions*  
E. Morenzoni, R. Khasonov, H. Luetkens, T. Prokscha, A. Suter, N. Garifianov, H. Glückler, M. Birke, E.M. Forgan, H. Keller, J. Litterst, Ch. Niedermayer, G. Nieuwenhuys, *Physica B* **326**, 196-204 (2003).
- *Universal properties of cuprate superconductors*  
T. Schneider, *Physica B* **326**, 289295 (2003).
- *MgB<sub>2</sub> single crystals: high pressure growth and physical properties*  
J. Karpinski, M. Angst, J. Jun, S.M. Kazakov, R. Puzniak, A. Wisniewski, J. Roos, H. Keller, L. Degiorgi, M. R. Eskildsen, L. Vinnikov and A. Mironov, *Supercond. Sci. Technol.* **16**, 221-230 (2003).

#### Articles in press

- *Relationship between the isotope effects on transition temperature, specific heat and penetration depths*  
T. Schneider, *Phys. Rev. B*.
- *Three-Spin-Polarons and Their Elastic Interaction in Cuprates*  
B.I. Kochelaev, A.M. Safina, A. Shengelaya, H. Keller, K.A. Müller, and K. Conder, *Mod. Phys. Lett. B*.

### Conference reports

- *Anisotropic phase diagram of MgB<sub>2</sub> by torque magnetometry (poster)*  
M. Angst, D. Di Castro, S. Kohout, J. Roos, H. Keller, J. Jun, S. M. Kazakov, J. Karpinski, R. Puzniak, and A. Wisniewski, Annual meeting of the Swiss Physical Society, Basel, 20-21 March, 2003.
- *Study of the boron isotope effect on the magnetic penetration depth in MgB<sub>2</sub> superconductor by  $\mu$ SR experiment*  
D. Di Castro, R. Khasanov, D. Eschenko, A. Shenghelaya, I.M. Savic, K. Conder, S. Kazakov, J. Karpinski, M. Angst, J. Roos, and H. Keller, Annual meeting of the Swiss Physical Society, Basel, 20-21 March, 2003.
- *New Nanotorque Sensors for Magnetometry*  
S. Kohout, D. Di Castro, M. Angst, H. Keller, Annual meeting of the Swiss Physical Society, Basel, 20-21 March, 2003.

### Invited lectures

- M. Angst: *Anisotropy and phase diagram of MgB<sub>2</sub> by torque magnetometry*  
Seminar über Festkörperphysik, Forschungszentrum Karlsruhe und Universität Karlsruhe, Germany, 25 November, 2002.
- D. Eshchenko:  
*Muonium Formation and End-of-Track Processes in Insulators and Semiconductors*  
Laboratory for Muon Spin Spectroscopy; Seminar; PSI Villigen, Switzerland, 23 January, 2002.
- D. Eshchenko: *Muonium Ionization in CdS; a Cascade Approach*  
XXXVI Annual Winter School on Nuclear and Particle Physics of the St.Petersburg Institute of Nuclear Physics, Repino, Russia, 26 February - 2 March, 2002.
- D. Eshchenko: *Diamagnetism of a Weakly Bound State in Semiconductors*  
XXXVI Annual Winter School on Nuclear and Particle Physics of the St.Petersburg Institute of Nuclear Physics, Repino, Russia, 26 February - 2 March, 2002.
- H. Keller: *Unconventional isotope effects in high-temperature cuprate superconductors*  
Tbilisi State University, Tbilisi, Georgia, 17 September, 2002.
- H. Keller: *Unconventional isotope effects in high-temperature cuprate superconductors*  
Anorganisch-chemisches Institut, Universität Zürich, 20 December, 2002.
- H. Keller: *Unconventional isotope effects in high-temperature cuprate superconductors*  
9th International Conference on Muon Spin Rotation, Relaxation and Resonances, Williamsburg (VA), U.S.A., 6 June, 2002.
- T. Schneider: *Universal properties of cuprates superconductors*  
Institut für Festkörperphysik, KFA Karlsruhe, 31 January, 2002.
- T. Schneider: *Quantum phase transitions in cuprates superconductors*  
Physics Department, University Neuchatel, 17 May, 2002.

- T. Schneider: *Universal properties of cuprates superconductors*  
Laboratorium für Festkörperphysik, ETH, Zürich, 23 May, 2002.
- T. Schneider: *Universal properties of cuprates superconductors*  
9th International Conference on Muon Spin Rotation, Relaxation and Resonances, Williamsburg (VA), U.S.A., 5 June, 2002.
- A. Shengelaya: *Recent Results of EPR studies of  $La_{2-x}Sr_xCuO_4$*   
International Conference on Low Energy Electrodynamics in Solids (LEES), Montauk NY, USA, 13 October, 2002.
- M. Mali: *Pseudogap in cuprate superconductors measured by NMR/NQR*  
Workshop on *Gaps and pseudogaps in cuprates*, Physik-Institut, Universität Zürich, 11 December, 2002.

### 18.3 Research group of Prof. P. F. Meier

#### Articles

- *Electric field gradients from first-principles and point-ion calculations*  
E. P. Stoll, T. A. Claxton, and P. F. Meier, Phys.Rev.B **65**, 064532 (2002).
- *Comparison of the Electronic Structures of  $La_2CuO_4$ ,  $Sr_2CuO_2Cl_2$ , and  $Sr_2CuO_2F_2$*   
C. Bersier, E. P. Stoll, P. F. Meier, and T.A. Claxton, J. Supercond. Inc. Nov. Magn. **15**, 403-408 (2002).
- *Muon sites and hyperfine fields in  $La_2CuO_4$*   
H.U. Suter, E. P. Stoll, and P. F. Meier, Physica B: Condensed Matter, **326**, 329-332 (2003).
- *Nuclear magnetic resonance chemical shifts and paramagnetic field modifications in  $La_2CuO_4$*   
S. Renold, T. Heine, J. Weber, and P. F. Meier, Phys.Rev.B **67**, 024501 (2003).
- *Dimensional complexity and spectral properties of the human sleep EEG*  
Y. Shen, E. Olbrich, P. Achermann, and P. F. Meier, Clin. Neurophysiol., **114**, 199-209 (2003).

#### Articles in press

- *Influence of Lattice Parameter Scaling on Local Electronic and Magnetic Properties in  $La_2CuO_4$*   
S. Renold and P. F. Meier, J. of Superconductivity, In Press, (2003).
- *Dynamics of human sleep EEG*  
E. Olbrich, P. Achermann and P. F. Meier, Neurocomputing, In Press, (2003).
- *Charge Distribution in  $La_{2-x}Sr_xCuO_4$*   
E. P. Stoll, P. F. Meier, and T. A. Claxton, Int. J. of Mod. Physics B, In Press, (2003).

**Diploma and PhD theses**

- *Time Series Analysis of the Human Electroencephalogram*  
Y. Shen, Dissertation, Universität Zürich, 2002.
- *Modellrechnungen zu MNR-Experimenten an Kuprat-Supraleitern*  
T. Mayer, Diplomarbeit, Universität Zürich, 2002.
- *Temperature Dependence of NMR Relaxation Rates in Cuprates Interpreted by Spin Correlations in Heisenberg Systems*  
A. Höchner, Diplomarbeit, Universität Zürich, 2002.

**Invited lectures**

- E. P. Stoll: *Electric field gradients from first-principles and point-ion calculations*  
SPG Tagung, Lausanne, 28.02.02.
- E. Olbrich: *Dynamics of human sleep EEG*  
Seminar, Max-Planck-Institut für Physik komplexer Systeme, Dresden, 27.03.02.
- E. P. Stoll: *“Stripes”, Perkolation, Fraktale – Konsequenzen für HTSC-Theorien*  
Seminar für Experimentalphysik, Universität Zürich, 13.06.02.
- P.F. Meier: *Time Series Analysis of Electroencephalograms*  
Kolloquium, MPI München, 12.12.02.
- P.F. Meier: *Charge Distribution in Undoped and Doped  $La_2CuO_4$*   
Internat. Conference on Superconductors, New<sup>3</sup>SC, SanDiego, USA, 20.01.03.

**18.4 Research group of Prof. J. Osterwalder****Articles**

- *The Fermi surface in a magnetic metal-insulator interface*  
T. Greber, W. Auwärter, M. Hoesch, G. Grad, P. Blaha, J. Osterwalder, Surf. Rev. Lett. 9 (2002) 1243-1250.
- *Reduction of the magnetic moment at the  $h$ -BN/Ni(111) interface*  
T. Greber, W. Auwärter, G. Grad, P. Blaha, J. Osterwalder, Proceedings of the *Conference on Atomic Level Characterization (ALC'01)*, Nara, Japan, (Nara-Ken New Public Hall 2002), 235-240.
- *Spin-polarized Fermi surface mapping*  
M. Hoesch, T. Greber, V. N. Petrov, M. Muntwiler, M. Hengsberger, W. Auwärter, J. Osterwalder, J. Electron Spectrosc. Relat. Phenom. 124 (2002) 263-279.
- *Co on  $h$ -BN/Ni(111): from island to island-chain formation and Co intercalation*  
W. Auwärter, M. Muntwiler, T. Greber, J. Osterwalder, Surf. Sci. 511 (2002) 379-386.



- *Tailoring confining barriers for surface states by step decoration: CO/vicinal Cu(111)*  
F. Baumberger, T. Greber, B. Delley, J. Osterwalder, Phys.Rev.Lett.88, 237601 (2002).
- *Quenching of majority-channel quasiparticle excitations in cobalt*  
S. Monastra, F. Manghi, C. A. Rozzi, C. Arcangeli, E. Wetli, H.-J. Neff, T. Greber, J. Osterwalder, Phys.Rev.Lett.88, 236402 (2002).

#### Articles in press

- *XPS/AES structural effects: diffraction*  
J. Osterwalder, Book chapter in *Surface Analysis by Electron Spectroscopy*, D. Briggs and J. Grant, eds., Surface Spectra Ltd and IM Publications (2003).
- *The electronic structure of a surfactant layer: Pb/Cu(111)*  
F. Baumberger, A. Tamai, M. Muntwiler, T. Greber, J. Osterwalder, Surf. Sci. (2003).
- *Optical recognition of atomic steps on surfaces*  
F. Baumberger, Th. Herrmann, A. Kara, S. Stolbov, N. Esser, T. S. Rahman, J. Osterwalder, W. Richter, T. Greber, Phys. Rev. Lett. (2003).

#### Diploma and PhD theses

- *Electronic surface states in lateral super-structures*  
Felix Baumberger, Ph. D. Thesis, Physik-Institut, Universität Zürich, 2002.
- *Spin-resolved Fermi surface mapping*  
Moritz Hoesch, Ph. D. Thesis, Physik-Institut, Universität Zürich, 2002.
- *One monolayer of hexagonal boron nitride on Ni(111): an atomically sharp interface*  
Wilhelm Auwärter, Ph. D. Thesis, Physik-Institut, Universität Zürich, 2002.
- *Vorbereitende Arbeiten für zeitaufgelöste LEED-Experimente*  
Michael K. Barry, Diploma Thesis, Physik-Institut, Universität Zürich, 2002.

#### Contributed conference presentations

- *Spin-polarized Fermi surface mapping*  
M. Hoesch, SPG Jahrestagung, EPF Lausanne, 1.3.02.
- *Observation of electron standing waves normal to the surface*  
T. Greber, Symposium on Surface Science 2003, St. Christoph, Austria, 6.3.02.
- *Surface states in lateral super-structures*  
F. Baumberger (Poster), Symposium on Surface Science 2003, St. Christoph, Austria, 6.3.02.
- *Realization of a time-resolved low-energy electron diffraction experiment*  
M. Hengsberger (Poster), 9th Workshop on Desorption Induced by Electronic Transitions, Aussois, France, 4.6.02.

- *The electronic structure of a surfactant layer: Pb/Cu(111)*  
M. Muntwiler, Nano-7 and 21st European Conference on Surface Science, Malmö, Sweden, 26.6.02.
- *An instrument for spin-resolved Fermi surface mapping*  
M. Hoesch (Poster Award), Nano-7 and 21st European Conference on Surface Science, Malmö, Sweden, 26.6.02.
- *Electronic Surface States in Lateral Super-Structures*  
T. Greber (Poster), Workshop on Low-Dimensional Structures, Universität Marburg, 2.7.02.
- *Optical recognition of atomic steps on surfaces*  
T. Greber, SPG Jahrestagung, Universität Basel, 21.3.03.
- *Direct determination of the adsorption geometry of large molecules*  
J. Wider, SPG Jahrestagung, Universität Basel, 21.3.03.

#### Invited lectures

- M. Hoesch: *COPHEE, the complete photoemission experiment*  
Surface Science Seminar at EMPA Dübendorf, 16.5.02.
- J. Osterwalder: *6 Hours of Lecture on Photoemission Spectroscopy*  
ICTP School on Synchrotron Radiation, Trieste, Italy, 20.-24.5.02.
- J. Osterwalder: *Grenzflächen von Band-Ferromagneten untersucht mit winkelaufgelöster Photoemission*  
Kolloquium, FB Physik, TU Braunschweig, 18.6.02.
- J. Osterwalder: *Aus dem Bilderbuch der Photoemission: Grenzflächen von Band-Ferromagneten*  
Kolloquium, Physikalisches Institut, Universität Münster, 13.11.02.
- F. Baumberger: *Surface electronic structure of stepped Cu(111): super-lattice states and charge asymmetries at low coordinated sites*  
Surface Science Seminar at EMPA Dübendorf, 4.12.02.
- T. Greber: *Investigating an atomically sharp spintronic junction with angular resolved photoemission and scanning tunneling spectroscopy: h-BN/Ni(111)*  
294th WE Heraeus Seminar on Frontiers in Nanomagnetism, Bad Honnef, 8.1.03.
- T. Greber: *The next 23 years: functional films and surfaces*  
ITS, EPF Lausanne, 16.1.03.
- J. Osterwalder: *Angle-resolved photoemission: measuring electronic bands at high resolution in energy, momentum and spin*  
19th SAOG Meeting, Fribourg, 24.1.03.

### 18.5 Research group of Prof. U. Straumann, (for H1 publications see Sec.18.6)

#### Articles

- *Determination of the Gravitational Constant with a Beam Balance*  
St. Schlamminger, E. Holzschuh, W. Kündig, Phys.Rev.Lett.**89** (2002) 161102.
- *Studies of Aging and HV Breakdown Problems during Development and Operation of MSGC and GEM Detectors for the Inner Tracking System of HERA-B*  
Y. Bagaturia, O. Baruth, H.B. Dreis, F. Eisele, I. Gorbunov, S. Gradl, W. Gradl, S. Hausmann, M. Hildebrandt, T. Hott, S. Keller, C. Krauss, B. Lomonosov, M. Negodaev, C. Richter, P. Robmann, B. Schmidt, U. Straumann, P. Trüöl, S. Visbeck, T. Walter, C. Werner, U. Werthenbach, G. Zech, T. Zeuner, and M. Ziegler, hep-ex/0204011, Nucl.Instr.Meth.**A490** (2002), 223 - 242.
- *Purity Monitoring System for the H1 Liquid Argon Calorimeter*  
H1 Calorimeter Group, E. Barrelet et al., Nucl.Instr.Meth.**A490** (2002) 204-222.
- *Search for the production of single sleptons through R-Parity Violation in  $p\bar{p}$  collisions at  $\sqrt{s}=1.8$  TeV*  
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- *$t\bar{t}$  production cross section in  $p\bar{p}$  collisions at  $\sqrt{s} = 1.8$  TeV*  
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- *Search for  $mSUGRA$  in single-electron events with jets and large missing transverse energy in  $p\bar{p}$  collisions at  $\sqrt{s} = 1.8$  TeV*  
DØ-Collaboration, V. M. Abazov et al., Phys.Rev.D **66** (2002) 112001.
- *Improved W boson mass measurement with the D0 detector*  
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- *A direct measurement of W boson decay width*  
DØ-Collaboration, V. M. Abazov et al., Phys.Rev.D **66** (2002) 032008.
- *Search for R-parity violating supersymmetry in dimuon and four-jets channel*  
DØ-Collaboration, V. M. Abazov et al., Phys.Rev.Lett.**89** (2002) 171801.
- *Search for leptoquark pairs decaying to  $\nu\nu +$  jets in  $p\bar{p}$  collisions at  $\sqrt{s} = 1.8$  TeV*  
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- *The inclusive jet cross-section in  $p\bar{p}$  collisions at  $\sqrt{s} = 1.8$  TeV using the  $k(T)$  algorithm*  
DØ-Collaboration, V. M. Abazov et al., Phys.Lett.B **525** (2002) 211.
- *Subjet multiplicity of gluon and quark jets reconstructed with the  $k(T)$  algorithm in  $p\bar{p}$  collisions*  
DØ-Collaboration, V. M. Abazov et al., Phys.Rev.D **65** (2002) 052008.
- *Hard single diffraction in  $\bar{p}p$  collisions at  $\sqrt{s} = 630$  GeV and 1800 GeV*  
DØ-Collaboration, V. M. Abazov et al., Phys.Lett.B **531** (2002) 52.
- *A precise measurement of the direct CP violating parameter  $Re(\epsilon'/\epsilon)$*   
the NA48 Collaboration, Eur.Phys.J.22, 231-254.
- *Precise measurement of the decay  $K_L \rightarrow \pi^0\gamma\gamma$*   
the NA48 Collaboration, Phys.Lett.536, 229-240.

- *A Measurement of the  $K_S$  Lifetime*  
the NA48 Collaboration, Phys.Lett.537, 28-40.

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- *The CIP2k First Level Trigger System at the H1 experiment at HERA*  
M. Urban, J. Becker, S. Schmitt and U. Straumann, IEEE Trans. Nucl. Sci. **50**, No. 4 (2003).
- *Multiple Jet Production at low transverse energies in  $p\bar{p}$  collisions at  $\sqrt{s}= 1.8$  TeV*  
DØ-Collaboration, V. M. Abazov *et al.*, FERMILAB-PUB-02-153-E, hep-ex/0207046, July 2002, submitted to Phys.Rev.D.
- *Investigation of  $K_S \rightarrow \pi^+\pi^-e^+e^-$  decays*  
the NA48 Collaboration, to be submitted to Eur.Phys.J.

#### Diploma and PhD theses

- *Determination of the Gravitational Constant Using a Beam Balance*  
Stephan Schlamminger, PhD Thesis, Physik-Institut, Universität Zürich, 2002.
- *A Silicon Inner Tracker for the LHCb Experiment*  
Phillip Sievers, PhD Thesis, Physik-Institut, Universität Zürich, 2002.

#### Conference reports

- M. Urban, J. Becker, S. Schmitt and U. Straumann: *The CIP2k First Level Trigger System at the H1 experiment at HERA*  
Proceedings of the 2002 IEEE NSS/MIC, Norfolk, Virginia, USA, Nov. 10-16, 2002.
- J. Becker, H. Cramer, M. Hildebrandt, K. Müller, S. Schmitt, U. Straumann, M. Urban and N. Werner: *A First Level Trigger Subsystem CIP2k for the H1 experiment at HERA*  
8th topical seminar on innovative particle and radiation detectors, Siena, Italy, 21 to 24 October 2002.
- P. Sievers: *Performance tests of large pitch silicon strip sensors for the LHCb Inner Tracker*  
Poster Session at the 9th European Symposium on Semiconductor Detectors, June 23 - 27, 2002, Schloss Elmau, Germany, LHCb public note 2002-044, to be published in Nucl.Instr.Meth.A.
- St. Schlamminger, E. Holzschuh, W. Kündig: *A Beam Balance Experiment to Determine the Gravitational Constant*  
Conference Digest, to be published in Conference on Precision Electromagnetic Measurements, 2002.
- J. Blocki and F. Lehner: *The thermal properties of Silicon Detectors used in high energy physics*  
ANSYS 2002 Conference, April 22-24, 2002, Pittsburgh, Pennsylvania, USA.
- Peter Fierlinger: *Giant Absorption Cross Sections of Gadolinium on UCN*  
Annual Meeting of the SPS, Basel 20.-21.3.03.

- Peter Fierlinger: *Giant Absorption Cross Sections of Gadolinium on UCN*  
DPG Frühjahrstagung, Tübingen 17.-21.3.03.

### Invited lectures

- F. Lehner: *The Status of LHCb and its Inner Tracker detector*  
Experimental Particle Physics Seminar at Kansas State University, March 10, 2003, Manhattan, Kansas, USA.
- Phillip Sievers: *The LHCb Silicon Inner Tracker*  
High Energy Physics Seminar, UCLA Los Angeles, 29.01.2003.
- F. Lehner on behalf of the LHCb Silicon Tracker Collaboration: *The LHCb Inner Tracker technical design*  
61st open LHCC session, November 27, 2002, CERN, Geneva, Switzerland.
- F. Lehner on behalf of the LHCb Silicon Tracker Collaboration: *The LHCb Silicon Tracker*  
11th International Workshop on Vertex Detectors 'Vertex 2002', November 3-8, 2002, Kailua Kona, Hawaii, USA, to be published in Nucl.Instr.Meth..
- Achim Vollhardt: *Development of the Inner Tracker Detector Electronics for LHCb*  
8th Workshop on Electronics for LHC Experiments, September 9 - 13, 2002, Colmar, France, LHCb public note LHCb-2002-068.
- U. Straumann: *Experimental Methods in Deep Inelastic Scattering at the HERA Collider*  
Graduiertenkolleg Tübingen – Basel, Basel, 5. Juli 2002.
- Nicole Werner: *Structure function measurements at HERA and the determination of  $\alpha_s$  and the parton distributions*  
XXXVIII<sup>th</sup> Rencontres de Moriond: to QCD and High Energy Hadronic Interactions, Les Arcs F (March 2003), 22. 3. 2003

### Notes and technical design reports

- *Silicon Sensor Quality Assurance for the DØ RunIIb Silicon Detector: Procedures and Equipment*  
Frank Lehner, DØ-note 4120, March 2003.
- *Tracking Performance and Robustness Tests*  
Matthew Needham, LHCb note 2003-020.
- *Silicon Tracker simulation performance*  
Matthew Needham, LHCb note 2003-015.
- *LHCb Inner Tracker: Technical Design Report*  
LHCb Collaboration, CERN/LHCC 2002-029, November 2002.
- *The liquid cooling system of the LHCb Inner Tracker: Design constraints and considerations*  
F. Lehner and M. Stodulski, LHCb-2002-066.

- *Alignment Tolerances for the Inner Tracker*  
F. Lehner and O. Steinkamp, LHCb Note 2002-064.
- *The LHCb Inner Tracker data readout system*  
A. Vollhardt, LHCb public note 2002-062.
- *The LHCb Inner Tracker cooling balcony and plate: Design and Material Selection Studies*  
K. Bösiger et al., LHCb-2002-061.
- *Design, Construction and Thermal Measurements on a Detector Box for the LHCb Inner Tracker*  
K. Bösiger et al., LHCb-2002-059.
- *Test Beam Results of Multi-Geometry Prototype Sensors for the LHCb Inner Tracker*  
M. Agari, C. Bauer, B. Carron, S. Heule, S. Jimenez-Otero, F. Lehner, A. Ludwig, V. Pugatch, M. Schmelling, P. Sievers, O. Steinkamp, U. Straumann, M.T. Tran, A. Vollhardt, H. Voss, LHCb Note 2002-058.
- *Layout and R&D for an All-Silicon TT Station*  
O. Steinkamp, LHCb Note 2002-056.
- *Momentum resolution studies for the inner tracker*  
Matthew Needham, LHCb note 2002-043.
- *Description and evaluation of multi-geometry silicon prototype sensors for the LHCb Inner Tracker*  
F. Lehner, P. Sievers, O. Steinkamp, U. Straumann, A. Vollhardt, M. Ziegler, LHCb public note 2002-038, July 2002.
- *Inner and Outer tracker occupancies in the light LHCb detector*  
Matthew Needham, LHCb note 2002-032.
- *New data model, digitization and reconstruction algorithms for the inner tracker*  
Matthew Needham, LHCb note 2002-030.

## 18.6 H1 Publications by the groups of Straumann and Truöl

### Articles

- *Measurement of Dijet Electroproduction at Small Jet Separation*  
H1-Collab., C. Adloff *et al.*, hep-ex/0111006, Eur.Phys.J.**C24** (2002), 33 - 41.
- *Measurement of Dijet Cross Sections in Photoproduction at HERA*  
H1-Collab., C. Adloff *et al.*, hep-ex/0201006, Eur.Phys.J.**C25** (2002), 13 - 23.
- *Energy Flow and Rapidity Gaps between Jets in Photoproduction at HERA*  
H1-Collab., C. Adloff *et al.*, hep-ex/0203011, Eur.Phys.J.**C24** (2002), 517 - 527.
- *A Measurement of the  $t$  Dependence of the Helicity Structure of Diffractive  $\rho$  Meson Electroproduction at HERA*  
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- *Inelastic Photoproduction of  $J/\Psi$  Mesons at HERA*  
H1-Collab., C. Adloff *et al.*, hep-ex/0205064, Eur.Phys.J.**C25** (2002), 25 - 39.

- *Inelastic Leptoproduction of  $J/\Psi$  Mesons at HERA*  
H1-Collab., C. Adloff *et al.*, hep-ex/0205065, Eur.Phys.J.**C25** (2002), 41 - 53.
- *Search for QCD Instanton-Induced Processes in Deep-Inelastic Scattering at HERA*  
H1-Collab., C. Adloff *et al.*, hep-ex/0205078, Eur.Phys.J.**C25** (2002), 495 - 509.
- *Diffraction Photoproduction of  $\Psi(2S)$  Mesons at HERA*  
H1-Collab., C. Adloff *et al.*, hep-ex/0205107, Phys.Lett.**B541** (2002), 251 - 264.
- *Measurement of Inclusive Jet Cross Sections in Deep-Inelastic  $ep$  Scattering at HERA*  
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- *Search for Odderon-induced Contributions to Exclusive  $\pi^0$  Photoproduction at HERA*  
H1-Collab., C. Adloff *et al.*, hep-ex/0206073, Phys.Lett.**B544** (2002), 35 - 43.
- *Search for Excited Electrons at HERA*  
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- *Compact Front End Electronics and Bidirectional 3.3 GBPS Optical Datalink for fast Proportional Chamber Readout*  
S. Lüders, R. Baldinger, D. Baumeister, K. Bösigler, R. Eichler, M. Feuerstack-Raible, C. Grab, S. Löchner, B. Meier, P. Robmann, B.A. Schmid, U. Stange, S. Steiner, U. Straumann, S. Streuli, K. Szeke, and P. Truöl, hep-ex/0107064, Nucl.Instr.Meth.**A484** (2002) 515 - 527.

### Articles in print

- *Isolated Electrons and Muons in Events with Missing Transverse Momentum at HERA*  
H1-Collab., C. Adloff *et al.*, V. Andreev *et al.*, hep-ex/0301030, Phys.Lett.**B**.
- *Measurement of Inclusive Jet Cross Sections in Photoproduction at HERA*  
H1-Collab., C. Adloff *et al.*, hep-ex/0302034, Eur.Phys.J.**C**.
- *Measurement and QCD Analysis of Neutral and Charged Current Cross Sections at HERA*  
H1-Collaboration, C. Adloff *et al.*, hep-ex/0304003, submitted to Eur.Phys.J.**C** (2003)

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## 18.7 Research group of Prof. P. Truöl, (for H1 publications see Sec.18.6)

### 18.7.1 Articles

- *A Large Acceptance, High Resolution Detector for Rare  $K^+$ -decay Experiments*  
E865-Collaboration, R. Appel *et al.*, Nucl.Instr.Meth.**A479** (2002), 349 - 406.
- *Experimental Study of the Radiative Decays  $K^+ \rightarrow \mu^+ \nu_\mu e^+ e^-$  and  $K^+ \rightarrow e^+ \nu_e e^+ e^-$*   
E865-Collaboration, A.A. Poblaguev *et al.*, hep-ex/0204006, Phys.Rev.Lett.**89** (2002), 061803-1 - 061803-4.
- *Measurement of the  $\bar{b}b$  Production Cross Section at HERA in 920 GeV Proton-Nucleus Collisions*  
HERA-B Collaboration, I. Abt *et al.*, hep-ex/0205106, Eur.Phys.J.**C26** (2003), 345 - 355.
- *Studies of Aging and HV Breakdown Problems during Development and Operation of MSGC and GEM Detectors for the Inner Tracking System of HERA-B*  
Y. Bagaturia, O. Baruth, H.B. Dreis, F. Eisele, I. Gorbunov, S. Gradl, W. Gradl, S. Hausmann, M. Hildebrandt, T. Hott, S. Keller, C. Krauss, B. Lomonosov, M. Negodaev, C. Richter, P. Robmann, B. Schmidt, U. Straumann, P. Truöl, S. Visbeck, T. Walter, C. Werner, U. Werthenbach, G. Zech, T. Zeuner, and M. Ziegler, hep-ex/0204011, Nucl.Instr.Meth.**A490** (2002), 223 - 242.



- *Testing lepton flavour conservation*  
A. van der Schaaf, Proceedings of the Intern. Conf. on CP Violation (KAON 2001), eds. F. Constantini, G. Isidori and M. Sozzi, Pisa, Italy, June 12 - 17, 2001, Frascati Physics Series, Vol. XXVI, ISBN 88-86409-33-8.

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- *High Statistics Measurement of  $K_{e4}$  Decay Properties*  
E865-Collaboration, S. Pislak *et al.*, hep-ex/0301040, Physical Review **D** (2003).
- *$J/\Psi$  Production via  $\chi_c$  Decays in 920 GeV pA Interactions*  
HERA-B Collaboration, I. Abt *et al.*, DESY 02-187, hep-ex/0211033, Phys.Lett.**B**.
- *Inclusive  $V^0$  Production Cross Section from 920 GeV Fixed Target Proton-Nucleus Collisions*  
HERA-B Collaboration, I. Abt *et al.*, hep-ex/0212040, Eur.Phys.J.**C**.
- *WG2 Summary part 2: rare muon decays*  
A. van der Schaaf, Proceedings of the 3rd Intern. Workshop on *Neutrino Factories based on Muon Storage Rings* (NuFACT'01), May 24 - 30 2001, Tsukuba, Japan, to appear in Nucl.Instr.Meth.A.
- *$\mu e$  Conversion experiments: status and prospects*  
A. van der Schaaf, Proceedings of the 3rd Intern. Workshop on *Neutrino Factories based on Muon Storage Rings* (NuFACT'01), May 24 - 30 2001, Tsukuba, Japan, to appear in Nucl.Instr.Meth.A.
- *Open Heavy Flavor Production at HERA*  
J. Kroseberg, Proc. Lake Louise Winter Institute on Fundamental Interactions, Lake Louise, Alberta, Canada (2002), hep-ex/0206042.
- *Beauty in ep collisions*  
J. Kroseberg, Proc. Int. Conf. on the Structure and Interactions of the Photon (Photon03), Frascati I (April 2003).

### Lectures

- P. Truöl: *From biomolecules to quarks and gluons: the research program in experimental physics at the University of Zürich*  
Vilnius Gediminas Technical University, Vilnius, Lithuania, 25.03.2002.
- P. Truöl: *From biomolecules to quarks and gluons: the research program in experimental physics at the University of Zürich*  
Kaunas University of Technology, Kaunas, Lithuania, 26.03.2002.
- A. van der Schaaf: *Physics with Intense Muon Beams: Status and Prospects*  
Plenary talk, 3rd Intern. Workshop on *Neutrino Factories based on Muon Storage Rings* (NuFACT'02), July 1 - 6 2002, London, Proceedings in print (J. Phys. G.).
- A. van der Schaaf: *Search for  $\mu e$  Conversion with SINDRUM II*  
Parallel session, 3rd Intern. Workshop on *Neutrino Factories based on Muon Storage Rings* (NuFACT'02), July 1 - 6 2002, London, Proceedings in print (J. Phys. G.).

- A. van der Schaaf: *Experiments on Charged Lepton Flavour Violation*  
Proceedings of the PSI Summer School *Exploring the Limits of the Standard Model*, eds. R. Rosenfelder and M. Spira, August 18 - 24 2002, Zuoz, Switzerland, PSI Proceedings 03-02, ISSN 1019-6447.
- A. van der Schaaf:  *$\mu e$  Conversion Experiment*  
4th Workshop on Neutrino Oscillations and their Origin (NOON2003), February 10-14 2003, to be published by World Scientific.
- J. Kroseberg: *B Production at HERA*  
seminar Santa Cruz Institute for Particle Physics, 21.01.03.
- J. Kroseberg: *B Production at HERA*  
seminar UCLA Physics Department, 22.01.03.

### PhD theses

- *A Measurement of Beauty Production in High-Energy Positron-Proton Scattering*  
Jürgen Kroseberg, PhD Thesis, Universität Zürich, 2002.

### The HERA-B Collaboration

I. Abt, A. Abyzov, M. Adams, H. Albrecht, V. Amaral, A. Amorim, S. J. Aplin, A. Arefiev, I. Ariño, M. Atiya, V. Aushev, Y. Bagaturia, R. Baghshetsyan, V. Balagura, M. Bargiotti, S. Barsuk, O. Barsukova, V. Bassetti, J. Bastos, C. Bauer, Th. S. Bauer, M. Beck, A. Belkov, Ar. Belkov, I. Belotelov, I. Belyaev, K. Berkhan, A. Bertin, B. Bobchenko, M. Böcker, A. Bogatyrev, G. Bohm, C. Borgmeier, M. Bräuer, D. Broemmelsiek, M. Bruinsma, M. Bruschi, P. Buchholz, M. Buchler, T. Buran, M. Capeáns, M. Capponi, J. Carvalho, J. Chamanina, B. X. Chen, R. Chistov, M. Chmeisani, A. Christensen, P. Conde, C. Cruse, M. Dam, K. M. Danielsen, M. Danilov, S. De Castro, H. Deckers, K. Dehmelt, H. Deppe, B. Dolgoshein, X. Dong, H. B. Dreis, M. Dressel, D. Dujmic, R. Eckmann, V. Egorytchev, K. Ehret, V. Eiges, F. Eisele, D. Emelianov, S. Erhan, S. Esenov, L. Fabbri, P. Faccioli, W. Fallot-Burghardt, M. Feuerstack-Raible, J. Flammer, H. Fleckenstein, B. Fominykh, S. Fourletov, T. Fuljahn, M. Funcke, D. Galli, A. Garcia, Ll. Garrido, D. Gascon, A. Gellrich, K. E. K. Gerndt, B. Giacobbe, J. Gläß, T. Glebe, D. Goloubkov, A. Golutvin, I. Golutvin, I. Gorbounov, A. Gorišek, O. Gouchtchine, D. C. Goulart, S. Gradl, W. Gradl, Yu. Guilitzky, T. Hamacher, J. D. Hansen, R. Harr, C. Hast, S. Hausmann, J. M. Hernández, M. Hildebrandt, A. Hölscher, K. Höpfner, W. Hofmann, M. Hohlmann, T. Hott, W. Hulsbergen, U. Husemann, O. Igonkina, M. Ispiryan, S. İşsever, H. Itterbeck, J. Ivarsson, T. Jagla, Y. Jia, C. Jiang, A. Kaoukher, H. Kapitza, S. Karabekyan, P. Karchin, N. Karpenko, Z. Ke, S. Keller, F. Khasanov, H. Kim, Yu. Kiryushin, I. Kisel, F. Klefenz, K. T. Knöpfle, V. Kochetkov, H. Kolanoski, S. Korpár, C. Krauss, P. Kreuzer, P. Križan, D. Krücker, T. Kvaratskheliia, A. Lange, A. Lanyov, K. Lau, G. Leffers, I. Legrand, B. Lewendel, Y. Q. Liu, T. Lohse, R. Loke, B. Lomonosov, J. Lüdemann, R. Männer, R. Mankel, U. Marconi, S. Masciocchi, I. Massa, I. Matchikhilian, G. Medin, M. Medinís, M. Mevius, A. Michetti, Yu. Mikhailov, R. Miquel, R. Mizuk, A. Mohapatra, A. Moshkin, B. Moshous, R. Muresan, S. Nam, M. Negodaev, I. Négri, M. Nörenberg, S. Nowak, M. T. Núñez Pardo de Vera, T. Oest, A. Oliveira, M. Ouchrif, F. Ould-Saada, C. Padilla, P. Pakhlov, Yu. Pavlenko, D. Peralta, R. Pernack, T. Perschke, R. Pestotnik, B. AA. Petersen, M. Piccinini, M. A. Pleier, M. Poli,

V. Popov, A. Pose, D. Pose, I. Potashnikova, V. Pugatch, Y. Pylypchenko, J. Pyrlik, S. Ramachandran, F. Ratnikov, K. Reeves, D. Reßing, K. Riechmann, J. Rieling, M. Rietz, I. Riu, P. Robmann, J. Rosen, Ch. Rothe, W. Ruckstuhl, V. Rusinov, V. Rybnikov, D. Ryzhikov, F. Saadi-Lüdemann, D. Samtleben, F. Sánchez, M. Sang, V. Saveliev, A. Sbrizzi, S. Schaller, P. Schlein, M. Schmelling, B. Schmidt, S. Schmidt, W. Schmidt-Parzefall, A. Schreiner, H. Schröder, H.D. Schultz, U. Schwanke, A. J. Schwartz, A. S. Schwarz, B. Schwenninger, B. Schwingenheuer, R. Schwitters, F. Sciacca, S. Semenov, N. Semprini-Cesari, E. Sexauer, L. Seybold, J. Shiu, S. Shuvalov, I. Siccama, D. Škrk, L. Sözüer, A. Soldatov, S. Solunin, A. Somov, S. Somov, V. Souvorov, M. Spahn, J. Spengler, R. Spighi, A. Spiridonov, S. Spratte, A. Stanovnik, M. Starič, R. StDenis, C. Stegmann, S. Steinbeck, O. Steinkamp, D. Stieler, U. Straumann, F. Sun, H. Sun, M. Symalla, S. Takach, N. Tesch, H. Thurn, I. Tikhomirov, M. Titov, U. Trunk, P. Truöl, I. Tsakov, U. Uwer, V. Vagnoni, C. van Eldik, R. van Staa, Yu. Vassiliev, M. Villa, A. Vitale, I. Vukotic, G. Wagner, W. Wagner, H. Wahlberg, A. H. Walenta, M. Walter, T. Walter, J. J. Wang, Y. M. Wang, R. Wanke, D. Wegener, U. Werthenbach, P. J. Weyers, H. Wolters, R. Wurth, A. Wurz, S. Xella-Hansen, J. Yang, Yu. Zaitsev, M. Zaverlyaev, G. Zech, T. Zeuner, A. Zhelezov, Z. Zheng, Z. Zhu, R. Zimmermann, T. Živko, A. Zoccoli, J. Zweizig