

## 15 Publications

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

#### Articles

- **Final results on the neutrino magnetic moment from the MUNU experiment**  
Z. Daraktchieva et al. (MUNU Collaboration), Phys. Lett. **B 615** (2005) 153.
- **Vertex reconstruction in CMS**  
E. Chabanat et al., Nucl. Instr. Meth. in Phys. Research **A 549** (2005) 188.
- **The effect of highly ionising particles on the CMS silicon strip tracker**  
W. Adam et al., Nucl. Instr. Meth. in Phys. Research **A 543** (2005) 463.
- **Simulation of Heavily Irradiated Silicon Pixel Sensors and Comparison With Test Beam Measurements**  
V. Chiochia et al., IEEE Trans. Nucl. Sci. **52** (2005) 1067.
- **Fluence dependence of charge collection of irradiated pixel sensors**  
T. Rohe et al., Nucl. Instr. Meth. in Phys. Research **A 552** (2005) 232.
- **Results from Athena**  
A. Rotondi et al. (ATHENA Collaboration), AIP Conference Proceedings **796** (2005) 285.
- **Cold - Antimatter Physics**  
M. Amoretti et al. (ATHENA Collaboration), XLIII Int. Meeting on Nuclear Physics, Bormio, 2005, Ric. Sci. **124** (2005) 25, prep. hep-ex/0503034.
- **Detection of Antihydrogen Annihilations with a Si-Micro-Strip and pure CsI Detector**  
I. Johnson et al. (ATHENA Collaboration), Proc. of the 8th ICATPP Conf. on Astroparticle, Particle, Space Physics, Detectors and Medical Physics Applications, World Scientific (2004) 473, prep. physics/0401034.
- **ATHENA - First Production of Cold Antihydrogen and Beyond**  
A. Kellerbauer et al. (ATHENA Collaboration), Proc. of the Third Meeting on CPT and Lorentz Symmetry, Bloomington, USA, World Scientific (2005) 38, prep. hep-ex/0409045.
- **Production of Cold Antihydrogen with ATHENA for Fundamental Studies**  
A. Kellerbauer et al. (ATHENA Collaboration), Proc. of the XXXIXth Rencontres de Moriond 2004, Gioi Publishers (Hanoi, Ed. J. Tran Thanh Van 2005) 385, prep. hep-ex/0406074.
- **A Gaussian-sum filter for vertex reconstruction**  
T. Speer and R. Frühwirth, Proc. of the 2004 Conf. for Computing in High-Energy and Nuclear Physics (CHEP 04), Interlaken, 2004, CERN Yellow Report 2005-002.
- **A kinematic fit and a decay chain reconstruction library**  
K. Prokofiev and T. Speer, Proc. of the 2004 Conf. for Computing in High-Energy and Nuclear Physics (CHEP 04), Interlaken, 2004, CERN Yellow Report 2005-002.
- **Design and performance of the CMS Pixel Detector Barrel Modules**  
C. Hörmann, Proc. 11 Workshop on Electronics for LHC and future Experiments, Heidelberg, CERN-LHCC 2005-038 (2005).

**PhD thesis**

- **Study of the  $B_s^0 \rightarrow (J/\psi)\phi \rightarrow \mu^+\mu^-K^+K^-$  Decay with the CMS Detector at LHC**  
K. Prokofiev, PhD Thesis, Universität Zürich, 2005.

**Articles in press**

- **Study of  $K\bar{K}$  resonances in  $\bar{p}p \rightarrow K^+K^-\pi^0$  at 900 and 1640 MeV/c**  
C. Amsler et al. (CRYSTAL BARREL Collaboration), Phys. Lett. **B**.
- **CMS Physics technical design report volume I : Software and detector performance**  
E. Alagöz et al., CMS - TDR - 08, CERN-LHCC-2006-001.
- **A Gaussian sum - Filter for the Vertex Reconstruction**  
T. Speer and R. Frühwirth, Comp. Phys. Comm.
- **A double junction model of irradiated silicon pixel sensors for LHC**  
V. Chiochia et al., Proc. 10th Eur. Symp. on Semiconductor Detectors: New Developments in Radiation Detectors, Willbad Kreuth, Germany, 2005, Prep. physics/0506228, Nucl. Instr. Meth. in Phys. Research **A**.
- **Track reconstruction at the CMS experiment**  
T. Speer et al., Proc. of the X Int. Workshop on Advanced Computing and Analysis Techniques in Physics Research (ACAT 05), DESY Zeuthen, Germany, 2005, Nucl. Instr. Meth. in Phys. Research **A**.
- **Simulation and hit reconstruction of irradiated pixel sensors for the CMS experiment**  
E. Alagöz, V. Chiochia, M. Swartz, Proc. of the Workshop on Tracking in High Multiplicity Environments (TIME 2005), Zurich, Prep. physics/0512027, Nucl. Instr. Meth. in Phys. Research **A**.
- **Sensor simulation and position calibration for the CMS pixel detector**  
V. Chiochia, Proc. of Vertex 2005 - 14th Int. Workshop on Vertex detectors, Chuzenji Lake, Nikko, Japan, 2005, Prep. physics/0603192, Nucl. Instr. Meth. in Phys. Research **A**.
- **Extraction of electric field in heavily irradiated silicon pixel sensors**  
A. Dorokhov et al., Proc. Vertex 2004 Conf., Como, 2004, Prep. physics/0412036, Nucl. Instr. Meth. in Phys. Research **A**.
- **Study of the  $B_s \rightarrow J/\psi \phi$  Channel with CMS**  
V. Ciulli et al., Proc. of the X Int. Conf. on B - Physics at Hadron Machines, Assisi, Italy, 2005, Nucl. Phys. **B**.
- **Robust Vertex Fitters**  
T. Speer et al., Proc. of the Workshop on Tracking in High Multiplicity Environments (TIME 2005), Zurich, Nucl. Instr. Meth. in Phys. Research **A**.
- **Observation, modeling and temperature dependence of doubly peaked electric fields in irradiated silicon pixel sensors**  
M. Swartz et al., Proc. at the Pixel 2005 Conf., Bonn, 2005, Prep. physics/0510040, Nucl. Instr. Meth. in Phys. Research **A**.

- **The Control and Readout Systems of the CMS Pixel Barrel Detector**  
D. Kotlinski et al., Proc. at the Pixel 2005 Conf., Bonn, 2005,  
Nucl. Instr. Meth. in Phys. Research **A**.
- **Assembly of the CMS Pixel Barrel Modules**  
S. König et al., Proc. at the Pixel 2005 Conf., Bonn, 2005,  
Nucl. Instr. Meth. in Phys. Research **A**.
- **Design and Performance of the CMS Pixel Detector Readout Chip**  
H. Chr. Kästli et al., Proc. at the Pixel 2005 Conf., Bonn, 2005,  
Nucl. Instr. Meth. in Phys. Research **A**.
- **Progress with Cold Antihydrogen**  
M. Amoretti et al. (ATHENA Collaboration), Proc. of XIII Int. Workshop on Positron and Positronium Physics (POS05), Nucl. Instr. Meth. in Phys. Research **B**.

#### Invited lectures

- E. Alagöz: **Hit reconstruction at CMS from irradiated silicon pixels**  
Contributed paper, Jahrestagung der SPG, Lausanne, 14 February 2006.
- Y. Allkofer: **The lifetime measurement of  $\pi^\pm K^\mp$  atoms with DIRAC**  
Seminar, Budker Institute of Nuclear Physics, Novosibirsk, 14 September 2005.
- Y. Allkofer: **Large area Čerenkov counter for kaon - proton separation between 4 and 8 GeV/c**  
Contributed paper, Jahrestagung der SPG, Lausanne, 14 February 2006.
- C. Amsler:  **$K\pi$  atoms with DIRAC**  
Contributed talk, CHIPP plenary meeting, Paul Scherrer Institute, 28 September 2005.
- C. Amsler: **Report of NuPECC activities**  
Invited talk, CHIPP plenary meeting, Paul Scherrer Institute, 28 September 2005.
- V. Chiochia: **Charge collection in irradiated pixel sensors : beam test measurements and simulation**  
Invited talk, ESSD - 10th Eur. Symp. on semiconductor detectors, Wildbald, Kreuth, Germany, 12 June 2005.
- V. Chiochia: **The compact muon solenoid : Status of preparation**  
Invited talk, CHIPP plenary meeting, Paul Scherrer Institute, 28 September 2005.
- V. Chiochia: **Charge collection in irradiated pixel sensors : beam test and simulation**  
Invited talk, Workshop on Tracking in High Multiplicity Environments (TIME 05), Zurich, 7 October 2005.
- V. Chiochia: **CMS pixel simulation**  
14th Int. Workshop on Vertex Detectors (VERTEX 2005), Nikko, Japan, 9 November 2005.
- V. Chiochia: **Silicon tracking detectors for the LHC experiments**  
Seminar, DESY - Hamburg, 7 March 2006.
- V. Chiochia: **Silicon tracking detectors for the LHC experiments**  
Seminar, DESY - Zeuthen, 8 March 2006.

- C. Hörmann: **Performance of CMS pixel detector barrel modules**  
Invited talk, 11th Workshop on Electronics for LHC and Future Experiments, Heidelberg, 15 September 2005.
- K. Prokofiev: **Study of the  $B_s \rightarrow J/\psi \phi$  Channel with CMS**  
Invited talk to the X Int. Conf. on B-Physics at Hadron Machines, Assisi, 22 June 2005.
- T. Speer: **Track reconstruction in the CMS tracker**  
Invited talk to the X International Workshop on Advanced Computing and Analysis Techniques in Physics Research, Berlin, Germany, 25 May 2005.
- T. Speer: **Adaptative filter and gaussian sum filter for vertex reconstruction**  
Invited talk, Workshop on Tracking in High Multiplicity Environments (TIME 05), Zurich, 5 October 2005.
- T. Speer: **Search for the decay  $B_s$  to  $\mu^+ \mu^-$  at CMS**  
Invited talk, Workshop Flavour in the Era of the LHC, CERN, 9 November 2005.
- L. Wilke: **Extracting  $\Delta\Gamma$  in the  $B_s$  system from angular distributions of the  $B_s \rightarrow J/\psi \phi$  decay with the CMS detector**  
Contributed talk, DPG - Tagung, Dortmund, 28 March 2006.

#### **ATHENA Collaboration:**

M. Amoretti, C. Amsler, G. Bonomi, P. Bove, C. Canali, C. Carraro, C. L. Cesar, M. Charlton, M. Doser, A. Fontana, M. C. Fujiwara, R. Funakoshi, P. Genova, J. S. Hangst, R. S. Hayano, A. Kellerbauer, L. V. Joergensen, I. Johnson, V. Lagomarsino, R. Landua, E. Lodi Rizzini, M. Macri, N. Madsen, G. Manuzio, D. Mitchard, P. Montagna, H. Pruijs, C. Regenfus, J. Rochet, A. Rondoni, G. Testera, A. Variola, D. P. van der Werf, Y. Yamazaki, N. Zurlo

#### **MUNU Collaboration:**

C. Amsler, M. Avenier, C. Brogginini, J. Busto, C. Cerna, Z. Daraktchieva, F. Juget, D.H. Koang, J. Lamblin, D. Lebrun, O. Link, G. Puglierin, A. Stutz, A. Tadsen, J.-L. Vuilleumier, V. Zacek

#### **CRYSTAL BARREL Collaboration:**

C. Amsler, C. A. Baker, B. M. Barnett, C. J. Batty, M. Benayoun, P. Blüm, K. Braune, V. Credé, K. M. Crowe, M. Doser, W. Dünneweber, D. Engelhardt, M.A. Faessler, R. P. Haddock, F. H. Heinsius, 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, U. Strohmusch, M. Suffert, U. Thoma, I. Uman, S. Wallis-Plachner, D. Walther, U. Wiedner, B. S. Zou, Č. Zupančič

#### **DIRAC Collaboration:**

B. Adeva, L. Afanas'ev, Y. Allkofer, C. Amsler, D. Bartos, A. Benelli, V. Brekhovskikh, A. Caragheorgheopol, T. Cechak, M. Chiba, S. Constantinescu, C.O. Curceanu, C. Detraz, D. Dreossi, D. Drijard, A. Dudarev, I. Evangelou, J. L. Fungueirino Pazos, J. Gerndt, P. Gianotti, G. Giolu, O. Gorchakov, K. Griksay, C. Guaraldo, M. Hansroul, S. Horikawa, M. Iliescu, V. Karpukhin, J. Kluson, M. Kobayashi, P. Kokkas, V. Komarov, L. Kruglova,

V. Kruglov, A. Kulikov, A. Kuptsov, K. I. Kuroda, A. Lamberto, A. Lanaro, V. Lapchine, R. Lednicky, P. Levi Sandri, L. Lopez Aguera, V. Lucherini, N. Manthos, C. Marinas Pardo, L. Nemenov, M. Nikitin, K. Okada, V. Ol'shevskiy, M. Pentia, A. Penzo, M. Plo, T.C. Ponta, Z. Pustynnik, G.F. Rappazzo, J. Rochet, A. Romero Vidal, J. J. Saborido Silva, J. Schacher, F. Takeutchi, A. Tarasov, L. Tauscher, F. A. Triantis, T. Trojek, S. Trusov, J. Smolik, S. Sugimoto, A. Ryazantsev, V. Rykalin, O. Vazquez Doce, T. Vrba, V. Yaz'kov, M. Zhabitskiy, P. Zrellov

## 15.2 Research group of Prof. H.-W. Fink

### Articles

- **Time-resolved spectroscopic fluorescence imaging, transient absorption and vibrational spectroscopy of intact and photo-inhibited photosynthetic tissue**  
P.B. Lukins, S. Rehman, G.B. Stevens, D. George, *Luminescence*, 20 (2005), p. 143-151.
- **Synthesis and Characterization of PbSe Nanocrystal Assemblies**  
M. Bashouti, A. Sashchiuk, L. Amirav, S. Berger, M. Eisen, M. Krueger, U. Sivan, E. Lifshitzin, in *Nanoparticle Assemblies and Superstructures* (Ed. N. Kotov), CRC Press Taylor Francis Group, 2005, p. 207-224.
- **Axisymmetric Liquid Hanging Drops**  
E. Meister and T. Yu. Latychevskaia, *Journal of Chemical Education* 83(1), 2006, p.117-126.
- **Resorcin[4]arene Cavitand-Based Molecular Switches**  
V.A. Azov, A. Beeby, M. Cacciarini, A. G. Cheetham, F. Diederich, M. Frei, J. K. Gimzewski, V. Gramlich, B. Hecht, B. Jaun, T. Latychevskaia, A. Lieb, Y. Lill, F. Marotti, A. Schlegel, R. R. Schlittler, P. J. Skinner, P. Seiler, Y. Yamakoshi, *Advanced Functional Materials* 16(2), 2006, p. 147-156.
- **A Quantum Mechanical Scheme to reduce Radiation Damage in Electron Microscopy**  
H. Okamoto, T. Latychevskaia and H.-W. Fink, *Appl. Phys. Lett.* 88, 164103 (2006).
- **A Cryogenic Low Energy Electron Point Source Microscope**  
H. Okamoto and H.-W. Fink, *Rev. Sci. Instrum.* 77, 043714 (2006).

### Diploma thesis

- **Erste Festkörper-Elektrolyt-Ionenquelle**  
Sandra Thomann, Diplomarbeit, Universität Zürich, 2005.

### Conference reports

- **Energetics of Single DNA Molecules**  
H.-W. Fink and C. Escher, Extended Abstract, Proceedings of the Symposium on Surface Science, O41, Les Arcs France, 2005.
- **Vacuum Ion Emission from Solid Electrolytes**  
C. Escher, Swiss Physical Society Meeting, EPF Lausanne, 13.2.06.
- **Electron Holography of Individual Filamentous Phage (Poster)**  
G.B. Stevens, M. Krüger, T. Latyschevskaia, A. Plückthun, H.-W. Fink, Swiss Physical Society Meeting, EPF Lausanne, 13-14.2.06.

## 15.3 Research group of Prof. H. Keller

### Articles

- **Essential heterogeneities in hole-doped cuprate superconductors**  
K.A. Müller, in *Structure and Bonding Vol. 114, 1-11 (2005)*, A. Bussmann-Holder and K.A. Müller, eds., Springer-Verlag Berlin Heidelberg (2005).
- **Unconventional isotope effects in cuprate superconductors**  
H. Keller, in *Structure and Bonding Vol. 114, 143-169 (2005)*, A. Bussmann-Holder and K.A. Müller, eds., Springer-Verlag Berlin Heidelberg (2005).
- **Evidences for polaron formation in cuprates**  
A. Bussmann-Holder, H. Keller, and K.A. Müller, in *Structure and Bonding Vol. 114, 365-384 (2005)*, A. Bussmann-Holder and K.A. Müller, eds., Springer-Verlag Berlin Heidelberg (2005).
- **Polaron formation as origin of unconventional isotope effects in cuprate superconductors**  
A. Bussmann-Holder and H. Keller, *Eur. Phys. J. B* **44**, 487-429 (2005).
- **Unconventional isotope effects as evidence for polaron formation in cuprates**  
A. Bussmann-Holder, H. Keller, A.R. Bishop, A. Simon, R. Micnas, and K.A. Müller, *Europhys. Lett.* **72**, 423-429 (2005).
- **Magnetic freezeout of electrons into muonium atoms in GaAs**  
V.G. Storchak, D.G. Eshchenko, J.H. Brewer, B. Hitti, R.L. Lichti, and B.A. Aronson, *Phys. Rev. B* **71**, 113202-1-4 (2005).
- **Clean and dirty superconductivity in pure, Al-doped, and neutron irradiated MgB<sub>2</sub>: A far-infrared study**  
M. Ortolani, D. Di Castro, P. Postorino, I. Pallecchi, M. Monni, M. Putti, and P. Dore, *Phys. Rev. B* **71**, 172508-1-4 (2005).
- **Automated operation of a homemade torque magnetometer using LabVIEW**  
S. Kohout, J. Roos, and H. Keller, *Meas. Sci. Technol.* **16**, 2240-2246 (2005).

- **Anisotropy of the antiferromagnetic spin correlations in the superconducting state of  $\text{YBa}_2\text{Cu}_3\text{O}_7$  and  $\text{YBa}_2\text{Cu}_4\text{O}_8$**   
A. Uldry, M. Mali, J. Roos and P.F. Meier, J. Phys.: Condens. Matter **17**, L499-L505 (2005).
- **Pressure effect on the in-plane magnetic penetration depth in  $\text{YBa}_2\text{Cu}_4\text{O}_8$**   
R. Khasanov, J. Karpinski, and H. Keller, J. Phys.: Condens. Matter **17**, 2453 - 2460 (2005).
- **Pressure effects on the superconducting properties of  $\text{YBa}_2\text{Cu}_4\text{O}_8$**   
R. Khasanov, T. Schneider, and H. Keller, Phys. Rev. B **72**, 014524-1-4 (2005).
- **Observation of nonexponential magnetic penetration profiles in the Meissner state - A manifestation of nonlocal effects in superconductors**  
A. Suter, E. Morenzoni, N. Garifianov, R. Khasanov, E. Kirk, H. Luetkens, T. Prokscha, and M. Horisberger, Phys. Rev. B **72**, 024506-1-12 (2005).
- **Pressure effect on the magnetic penetration depth in  $\text{MgB}_2$**   
D. Di Castro, R. Khasanov, C. Grimaldi, J. Karpinski, S.M. Kazakov, and H. Keller, Phys. Rev. B **72**, 094504-1-5 (2005).
- **Pressure and isotope effect on the anisotropy of  $\text{MgB}_2$**   
T. Schneider and D. Di Castro, Phys. Rev. B **72**, 054501-1-4 (2005).
- **Magnetic penetration depth in  $\text{RbOs}_2\text{O}_6$  studied by muon spin rotation**  
R. Khasanov, D.G. Eshchenko, D.Di Castro, A. Shengelaya, F. La Mattina, A. Maisuradze, C. Baines, H. Luetkens, J. Karpinski, S.M. Kazakov, and H. Keller, Phys. Rev. B **72**, 104504-1-7 (2005).
- **Surface dynamics of a thin polystyrene film probed by low energy muons**  
F.L. Pratt, T. Lancaster, M.L. Brooks, S.L. Blundell, T. Prokscha, E. Morenzoni, A. Suter, H. Luetkens, R. Khasanov, K. Shinotsuka, and H.E. Assender, Phys. Rev. B **72**, 121401-1-4 (2005).
- **Anomalous electron-phonon coupling probed on the surface of  $\text{ZrB}_{12}$  superconductor**  
R. Khasanov, D. Di Castro, M. Belogolovskii, Yu. Paderno, V. Filippov, R. Bruetsch, and H. Keller, Phys. Rev. B **72**, 224509-1-4 (2005).
- **Coexistence and coupling of superconductivity and magnetism in thin film structures**  
A.J. Drew, S.L. Lee, D. Charlambous, A. Potenza, C. Marrows, H. Luetkens, A. Suter, T. Prokscha, R. Khasanov, E. Morenzoni, D. Ucko, and E.M. Forgan, Phys. Rev. Lett. **95**, 197201-1-4 (2005).
- **Muon-spin-rotation measurements of the penetration depth of the infinite-layer electron-doped  $\text{Sr}_{0.9}\text{La}_{0.1}\text{CuO}_2$  cuprate superconductor**  
A. Shengelaya, R. Khasanov, D.G. Eshchenko, D. Di Castro, I.M. Savić, M.S. Park, K.H. Kim, Sung-Ik Lee, K.A. Müller, and H. Keller, Phys. Rev. Lett. **94**, 127001-1-4 (2005).
- **Thin Film, Near-Surface and Multi-Layer Investigations by Low-Energy  $\mu^+$ SR**  
T. Prokscha, E. Morenzoni, A. Suter, R. Khasanov, H. Luetkens, D. Eshchenko, N. Garifianov, E. M. Forgan, H. Keller, J. Litterst, C. Niedermayer, and G. Nieuwenhuis, Hyperfine Interactions **DOI 10.1007/s10751-005-9104-5**, 1-8 (2005).
- **Microscopic phase separation and two type of quasiparticles in lightly doped  $\text{La}_{2-x}\text{Sr}_x\text{CuO}_4$  observed by electron paramagnetic resonance**  
A. Shengelaya, M. Bruun, B.I. Kochelaev, A. Safina, K. Conder, and K.A. Müller, in *Symmetry and Heterogeneity in High Temperature Superconductors*, ed. A. Bianconi (Springer, 2006) (pp. 105-116).

- **The search for new high temperature superconductors**  
K.A. Müller, *Supercond. Sci. Technol.* **19**, S1-S3 (2006).

### Conference reports

- **Insulator to metal transition and resistive memory effect in perovskites induced by electric field.**  
F. La Mattina, A. Shengelaya, J.G. Bednorz, and H. Keller, Annual meeting of the Swiss Physical Society, Bern, 14-15 July, 2005.
- **Oxygen Isotope effect on electronic phase separation in lightly-doped  $\text{La}_{2-x}\text{Sr}_x\text{CuO}_4$**   
A. Maisuradze, A. Shengelaya, K. Conder, H. Keller, K. A. Müller, Annual meeting of the Swiss Physical Society, Bern, 14-15 July, 2005.
- **Search for orbital current effects in cuprates by  $^{89}\text{Y}$  NMR**  
S. Strässle, M. Mali, J. Roos, J. Karpinski, and H. Keller, Annual meeting of the Swiss Physical Society, Bern, 14-15 July, 2005.
- **Insulator to metal transition and resistive memory effect in Cr-doped  $\text{SrTiO}_3$  induced by electric field.**  
F. La Mattina, A. Shengelaya, J.G. Bednorz, H. Keller, Swiss Workshop on Materials with Novel Electronic Properties, Les Diablerets, 26-28 September, 2005.
- **EPR study of the spin-lattice relaxation of  $\text{Yb}^{3+}$ -doped  $\text{YBa}_2\text{Cu}_3\text{O}_{7-x}$**   
A. Maisuradze, A. Shengelaya, K. Pomjakushina, K. Conder, K. A. Müller and H. Keller, Swiss Workshop on Materials with Novel Electronic Properties, Les Diablerets, 26-28 September, 2005.
- **Orbital current effects in cuprates: A  $^{89}\text{Y}$  NMR study**  
S. Strässle, M. Mali, J. Roos, J. Karpinski, and H. Keller, Swiss Workshop on Materials with Novel Electronic Properties, Les Diablerets, 26-28 September, 2005.
- **Orbital current effects in cuprates: A  $^{89}\text{Y}$  NMR study in  $\text{Y}_2\text{Ba}_4\text{Cu}_7\text{O}_{15}$**   
J. Roos, S. Strässle, M. Mali, T. Ohno, and H. Keller, International ICAM Workshop NMR/EPR of Correlated Electron Superconductors, 15-21 October, 2005.
- **NMR investigation of the vortex-lattice melting in  $\text{YBa}_2\text{Cu}_3\text{O}_7$**   
S. Strässle, J. Roos, M. Mali, A. Schilling, and H. Keller, Annual meeting of the Swiss Physical Society, Lausanne, 13-14 February, 2006.
- **EPR study of the spin-lattice relaxation of  $\text{Yb}^{3+}$ -doped  $\text{YBa}_2\text{Cu}_3\text{O}_{7-x}$**   
A. Maisuradze, A. Shengelaya, K. Pomjakushina, K. Conder, K. A. Müller and H. Keller, Annual meeting of the Swiss Physical Society, Lausanne, 13-14 February, 2006.
- **Effect of Cr doping on the voltage-induced insulator-to-metal transition and resistive memory behaviour of  $\text{SrTiO}_3$**   
F. La Mattina, A. Shengelaya, J.G. Bednorz, and H. Keller, Annual meeting of the Swiss Physical Society, Lausanne, 13-14 February, 2006.

### Invited lectures/talks

- D.G. Eshchenko: **Muon spin rotation studies of novel diluted magnetic semiconductors**  
Swiss Workshop on Materials with Novel Electronic Properties, Les Diablerets, 26-28 September, 2005.



- H. Keller: **Luft und Wasser**  
Kinderuniversität, Universität Zürich, Zürich, Switzerland, June 8, 2005.
- H. Keller: **Unconventional isotope effects in cuprate high-temperature superconductors - what can we learn from them?**  
Second Joint Taiwanese-Swiss Workshop on Nanotechnology: towards novel materials, Taipei, Taiwan, June 20-25, 2005.
- H. Keller: **Controlling mesoscopic phase separation: muon-spin rotation investigations**  
COMEPHS Kick-off Meeting, Athens, Greece, June 30 - July 1, 2005.
- H. Keller: **Unconventional isotope effects in cuprate superconductors - what can we learn from them?**  
Conference on *Electron State and Lattice Effects in Cuprate High Temperature Superconductors*, AIST Tsukuba, Japan, October 27-28, 2005.
- H. Keller: **Unconventional isotope effects in high  $T_c$  cuprates superconductors - what can we learn from them?**  
Max-Planck Institute for Solid State Research, Stuttgart, Germany, November 23, 2006.
- R. Khasanov: **Study of the magnetic penetration depth in  $RbOs_2O_6$**   
SR User's Meeting BVRA, PSI, Villigen, 19-20 January, 2005.
- R. Khasanov: **Unconventional isotope and pressure effects on the magnetic penetration depth in cuprate superconductors**  
PSI, Villigen, May 19, 2005.
- R. Khasanov: **Unconventional isotope effect on the magnetic penetration depth in cuprate superconductors**  
Ames Lab, Iowa State university, USA, December 6, 2005.
- J. Roos: **Orbital current effects in cuprates: A  $^{89}Y$  NMR study in  $Y_2Ba_4Cu_7O_{15}$**   
International ICAM Workshop NMR/EPR of Correlated Electron Superconductors, Dresden, Germany, October 15 - 21, 2005.

## 15.4 Research group of Prof. J. Osterwalder

### Articles

- **Growth of Cr-doped  $TiO_2$  films in the rutile and anatase structure by oxygen-plasma assisted molecular beam epitaxy**  
J. Osterwalder, T. Droubay, T. Kaspar, J. Williams, C. M. Wang, S. A. Chambers,  
Thin Solid Films 484, 289-298 (2005).
- **Doping-induced reorientation of  $C_{60}$  molecules on Ag(111)**  
A. Tamai, A. P. Seitsonen, R. Fasel, Z.-X. Shen, J. Osterwalder, T. Greber,  
Phys. Rev. B 72, 085421-1-5 (2005).
- **Electron-photon pulse correlator based on space-charge effects in a metal pinhole**  
A. Dolocan, M. Hengsberger, H. J. Neff, M. Barry, C. Cirelli, T. Greber, J. Osterwalder, Japan.  
J. Appl. Phys. 45, 285-291 (2006).
- **Chiral recognition of organic molecules by atomic kinks on surfaces**  
T. Greber, Z. Sljivančanin, R. Schillinger, J. Wider, B. Hammer,  
Physical Review Letters 96, 056103-1-4 (2006).

**Articles in press**

- **Single layer hexagonal boron nitride films on Ni(110)**  
T. Greber, L. Brandenberger, M. Corso, A. Tamai, J. Osterwalder, e-J. Surf. Sci. Nanotech.
- **Spin-polarized photoemission**  
J. Osterwalder, in *Magnetism: Synchrotron Radiation Approach*, E. Beaurepaire, H. Bulou, F. Scheurer, J.-P. Kappler, eds., (Springer, Berlin, Heidelberg, New York 2006) 27 p.

**Diploma and PhD theses**

- **Molecular arrangement and electronic properties of low-dimensional C<sub>60</sub> systems**  
Anna Tamai, Ph. D. Thesis, Physik-Institut, Universität Zürich, 2005.
- **Boron nitride and boron nanostructures on the (110) surface of molybdenum**  
Milan Allan, Diploma Thesis, Physik-Departement, ETH Zürich, 2006.

**Contributed conference presentations**

- **A study of the spin structure in the surface state of a kinked-vicinal Au(111) surface (Poster)**  
J. Lobo, 13th European Physical Society Meeting, Bern, 12.7.05.
- **Structural and electronic properties of C<sub>60</sub> chains (Poster)**  
A. Tamai, 13th European Physical Society Meeting, Bern, 12.7.05.
- **Towards time-resolved LEED from large molecules on surfaces**  
C. Cirelli, Swiss Physical Society Meeting, Bern, 14.7.05.
- **Hexagonal boron nitride on Pd(111): formation of Moiré patterns**  
M. Morscher, Swiss Physical Society Meeting, Bern, 14.7.05.
- **Giant resonance in two-photon-photoemission spectra from an insulating monolayer**  
M. Hengsberger, 13th European Physical Society Meeting, Bern, 14.7.05.
- **h-BN on Pd(110): a tunable system for self-assembled nanostructures ? (Poster)**  
M. Corso, 8th International Conference on the Structure of Surfaces, München, 18.7.05.
- **Time-resolved low-energy electron diffraction with pump-probe experiments**  
A. Dolocan, 8th International Conference on the Structure of Surfaces, München, 18.7.05.
- **Chiral heterorecognition: cysteine on Au(111) (Poster)**  
R. Schillinger, 4th PSI Summer School on Condensed Matter Research, Zuoz, 14.8.05.
- **Rashba effect and spin structure of the Shockley surface state on vicinal-kinked Au(111)**  
J. Lobo, 23rd European Conference on Surface Science (ECOSS), Berlin, 5.9.05.
- **Unusually large HOMO dispersion in C<sub>60</sub> chains**  
A. Tamai, 23rd European Conference on Surface Science (ECOSS), Berlin, 5.9.05.

- **Conformation related changes of molecular ionicity: C<sub>60</sub> on h-BN/Ni(111)**  
T. Greber, Conference *From Molecular Switches to Molecular Motors*, Monte Verità, Ascona, 23.9.05.
- **Progress on the nanomesh**  
M. Corso, 1st EMPA Ph. D. Symposium, EMPA Dübendorf, 20.10.05.
- **Two-photon photoemission: an ideal tool for studying lifetimes and excitation dynamics (Poster)**  
M. Hengsberger, 1st optETH Meeting, ETH Zürich, 28.10.05.
- **Magnetisation induced changes in the photoemission current from corannulene on h-BN/Ni(110)**  
L. Brandenberger, Swiss Physical Society Meeting, EPF Lausanne, 14.2.06.
- **Time-resolved low-energy electron scattering**  
T. Greber, Symposium on Surface Science (3S), St. Christoph, Austria, 10.3.06.
- **Chiral heterorecognition of organic molecules and inorganic surfaces**  
T. Greber, APS March Meeting, Baltimore, USA, 14.3.06.
- **Picosecond real-time observation of low-energy electron scattering from large molecules on surfaces**  
C. Cirelli, APS March Meeting, Baltimore, USA, 14.3.06.
- **Boron nitride nanostructures: complete layers and nanomeshes**  
M. Corso, APS March Meeting, Baltimore, USA, 15.3.06.
- **Toward direct structure determination of adsorbed molecules: D and L cysteine on Cu(111)**  
R. Schillinger, DPG Frühjahrstagung, Dresden, 30.3.06.

### Invited lectures

- J. Osterwalder: **Spin-resolved Fermi surface mapping**  
International Workshop on Strong Correlations and ARPES, Dresden, 4.4.05.
- T. Greber: **Formation of boron nitride layers on transition metals with and without holes**  
Nanoscience on Surfaces (NSOS) Workshop, Obergurgl, Austria, 28.4.05.
- J. Osterwalder: **Non-trivial orientations of C<sub>60</sub> molecules in fullerene monolayers**  
207th Meeting of the Electrochemical Society, Québec, Canada, 19.5.05.
- J. Osterwalder: **Von Einsteins Photoeffect zur hochauflösenden Festkörpersonde**  
Vortrag, Physikalische Gesellschaft Zürich, 2.6.05.
- J. Osterwalder: **Nanotemplates: vicinal surfaces and nanostructured boron nitride films**  
Festkörperphysik-Seminar, Universität Basel, 13.6.05.
- J. Osterwalder: **Nanotemplate surfaces**  
2nd Joint Taiwanese-Swiss Workshop on Nanotechnology: Towards Novel Materials, Academia Sinica, Taipei, Taiwan, 20.6.05.
- T. Greber: **Hexagonal boron nitride layers on transition metal surfaces: templates for building nanostructures**  
13th International Congress on Thin Films (ICTF) / 8th International Conference on Atomically Controlled Surfaces, Interfaces and Nanostructures (ACSIN), Stockholm, Sweden, 22.6.05.

- T. Greber: **The conformation matters: from molecular chains and switches to chiral heterorecognition**  
Physik-Kolloquium, Universität Bielefeld, 27.6.05.
- T. Greber: **X-ray photoelectron diffraction (XPD): probing atom positions and molecular orientations at surfaces**  
4th PSI Summer School on Condensed Matter Research, Zuoz, 14.8.05.
- T. Greber: **Boron nitride layers on metals: a lot for building nanostructures**  
23rd European Conference on Surface Science (ECOSS), Berlin, 5.9.05.
- M. Hengsberger: **Tracking ultrafast changes in solid surfaces: electron diffraction and photoelectron spectroscopy**  
SLS Seminar, PSI, 21.9.05.
- T. Greber: **Monolayers of hexagonal boron nitride with and without small holes: what are they good for ?**  
Abteilungsseminar, EMPA Thun, 13.10.05.
- J. Osterwalder: **Spin-polarized angle-resolved photoemission**  
Workshop on X-ray Spectroscopy in Magnetic Solids, PSI, 18.10.05.
- J. Osterwalder: **About photoemission and electrons in nanostructures**  
Physikalisches Kolloquium, ETH und Universität Zürich, 2.11.05.
- J. Osterwalder: **Photoemission spectroscopy on nanostructures**  
Physikalisches Kolloquium, Universität Regensburg, 28.11.05.
- T. Greber: **Molecular conformation and electronic structure: from molecular switches to chiral heterorecognition**  
ALS Seminar, Lawrence Berkeley Laboratory, Berkeley Ca., 30.11.05.
- M. Hengsberger: **Ultrafast dynamics on surfaces: development of a time-resolved structural probe**  
Seminar Oberflächenmagnetismus, Universität Münster, 2.12.05.
- T. Greber: **Boron nitride layers on transition metal surfaces and their spontaneous nanostructuring**  
5th International Conference on Atomic-Level Characterisation of New Materials and Devices (ALC), Kona, Hawaii, 5.12.05.
- M. Hengsberger: **Stepping towards real-time observation of molecular motion on surfaces: time-resolved electron diffraction**  
Seminar SFB *Energiedissipation an Grenzflächen*, Universität Duisburg-Essen, 10.1.06.
- M. Hengsberger: **Magnetism and angle-resolved photoemission**  
Colloque *Magnétisme à Soleil*, Gif sur Yvette, France, 17.1.06.
- J. Osterwalder: **Electronic structure of nanostructured surfaces and interfaces**  
IFF Kolloquium, Forschungszentrum Jülich, 20.1.06.
- J. Osterwalder: **Nanostructuring of hexagonal boron nitride films on transition metal surfaces**  
Seminar iNANO, University of Aarhus, Denmark, 16.3.06.

## 15.5 Research group of Prof. A. Schilling

### Articles

- **Spectral cut-off in the efficiency of the resistive state formation caused by absorption of a single-photon in current-carrying superconducting nano-strips**  
A. Semenov, A. Engel, H.-W. Hübers, K. Il'in, M. Siegel *The European Phys. Journal B*, **47**, (2005) 495-501.
- **Noise of a superconducting photon detector**  
A. Semenov, A. Engel, K. Il'in, M. Siegel, H.-W. Hübers *IEEE Transactions on Applied Superconductivity*, **15**, (2005) 518- 521.

### Articles in press

- **Superconducting detector using microwave current-noise**  
A. Semenov, H.-W. Hübers, K. Il'in, M. Siegel, and A. Engel, *Supercond. Sci. Technol.*
- **Electric noise and local photon-induced nonequilibrium states in a current-carrying nanostructured superconductor**  
A. Engel, A. Semenov, H.-W. Hübers, K. Il'in and M. Siegel, *New Frontiers in Superconductivity Research* (B.P. Martins, ed.), Nova Science Publishers.

### Bachelor thesis

- **Messung der Richtungsabhängigkeit der spezifischen Wärme von  $\text{YBa}_2\text{Cu}_3\text{O}_{7-\delta}$ : Ein Indikator für  $s$ - oder  $d$ -Wellen Supraleitung?**  
Stefan Menzi, Bachelorarbeit, Physik-Institut, Universität Zürich, 2005.

### Contributed conference presentations

- **Superconducting nanostructures: fluctuations and photon detectors (Poster)**  
A. Engel, H. Bartolf, A. Schilling, A. Semenov, H.-W. Hübers, K. Il'in and M. Siegel, *Manep workshop 2005*, Les Diablerets, Switzerland, 26.-28.9.2005.
- **Spectral performance of a single-photon detector (Poster)**  
A. Semenov, A. Engel, H.-W. Hübers, K. Il'in and M. Siegel, *Kryoelektronische Bauelemente KRYO2005*, Bad Herrenalb, Germany, 9.-11.10.2005.
- **Superconducting Nanostructures and Single Photon Detectors (Poster)**  
A. Engel, H. Bartolf, A. Schilling, A. Semenov, H.-W. Hübers, K. Il'in and M. Siegel, *SPG Jahrestagung 2006*, Lausanne, Switzerland, 13.-14.2.2006.
- **Design and realization of a sensitive technique to detect resonance phenomena in the range of 250 kHz to 2 MHz (Poster)**  
R. Dell'Amore, J. Roos and A. Schilling, *SPG Jahrestagung 2006*, Lausanne, Switzerland, 13.-14.2.2006.

**Invited lectures**

- A. Schilling: **Materials of Atoms, Matter of Vortices**  
Anorganisch-Chemisches Institut der Universität Zürich, 9.12.2005.
- A. Engel: **Physics of Superconducting Thin-Film Nanostructures – Applications as Single-Photon Detector**  
Manep Project 5 Internal Workshop 2006, Neuchâtel, Switzerland, 8.2.2006.

**15.6 Research group of Prof. U. Straumann****PhD theses**

- **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****HERA:**

- **Prompt Photons in DIS**  
Carsten Schmitz, Frühjahrstagung 2006 der Deutschen Physikalischen Gesellschaft e.V. - Fachverband Teilchenphysik, Dortmund, Deutschland, 28. - 31. March 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.

**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 DØ**  
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 DØ detector**  
Ralf Bernhard, APS Spring Meeting in Tampa, April 16-49, 2005.

**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. Park Hotel Schönbrunn, 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., Frühjahrstagung der DPG, FV Hadronen und Kerne, Berlin, March 2005.
- **Diamond-like carbon for Ultracold Neutron applications**  
S. Heule, et al., Frühjahrstagung 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 DØ and LHCb <sup>9</sup>**

- **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. Lois et al., LHCb-2005-033.

<sup>9</sup>LHCb notes can be accessed through the CERN document server on <http://cdsweb.cern.ch/>



- **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**  
M. Needham, A. Wenger, 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**  
M. Needham, 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

### Ultra-cold 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 2H2**  
P. Fierlinger et al., Phys. Rev. Lett. 94, 212502 (2005).
- **Production of ultra-cold neutrons from a cold neutron beam on a 2H2 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).

**DØ:**

- **Search for pair production of second generation scalar leptoquarks in  $p\bar{p}$  collisions at  $\sqrt{s} = 1.96$  TeV**  
V. M. Abazov *et al.* (DØ Collaboration),  
(arXiv:hep-ex/0601047).
- **Measurement of the isolated photon cross section in  $p\bar{p}$  collisions at  $\sqrt{s} = 1.96$  TeV**  
V. M. Abazov *et al.* (DØ 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  $H \rightarrow WW(*)$  decays in  $p\bar{p}$  collisions at  $\sqrt{s} = 1.96$  TeV**  
V. M. Abazov *et al.* (DØ Collaboration), Phys. Rev. Lett. 96, 011801 (2006),  
(arXiv:hep-ex/0508054).
- **The upgraded DØ detector**  
V. M. Abazov *et al.* (DØ Collaboration), arXiv:physics/0507191.
- **Measurement of the lifetime difference in the  $B_s^0$  system**  
V. M. Abazov *et al.* (DØ 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.* (DØ 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.* (DØ Collaboration), Phys. Rev. Lett. 95, 161602 (2005),  
(arXiv:hep-ex/0506063).
- **Measurement of the  $t\bar{t}$  production cross section in  $p\bar{p}$  collisions at  $\sqrt{s} = 1.96$  TeV in dilepton final states**  
V. M. Abazov *et al.* (DØ Collaboration) Phys. Lett. B 626, 55 (2005),  
(arXiv:hep-ex/0505082).
- **Search for single top quark production in  $p\bar{p}$  collisions at  $\sqrt{s} = 1.96$  TeV**  
V. M. Abazov *et al.* (DØ 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.* (DØ 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.* (DØ Collaboration), Phys. Rev. Lett. 95, 091801 (2005),  
(arXiv:hep-ex/0505018).
- **Measurement of the  $t\bar{t}$  production cross section in  $p\bar{p}$  collisions at  $\sqrt{s} = 1.96$  TeV using lepton + jets events with lifetime b-tagging**  
V. M. Abazov *et al.* (DØ Collaboration), Phys. Lett. B 626, 35 (2005),  
(arXiv:hep-ex/0504058).

- **Measurement of the  $t\bar{t}$  production cross section in  $p\bar{p}$  collisions at  $\sqrt{s} = 1.96$  TeV using kinematic characteristics of lepton + jets events**  
V. M. Abazov *et al.* (DØ 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.* (DØ Collaboration), Phys. Rev. Lett. 95, 151805 (2005),  
(arXiv:hep-ex/0504032).
- **Production of W Z events in  $p\bar{p}$  collisions at  $\sqrt{s} = 1.96$  TeV and limits on anomalous W W Z couplings**  
V. M. Abazov *et al.* (DØ 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.* (DØ Collaboration), Phys. Rev. Lett. 95, 151801 (2005),  
(arXiv:hep-ex/0504018).
- **Measurement of the  $p\bar{p} \rightarrow W\gamma + X$  cross section at  $\sqrt{s} = 1.96$  TeV and W W gamma anomalous coupling limits**  
V. M. Abazov *et al.* (DØ Collaboration), Phys. Rev. D 71, 091108 (2005)  
(arXiv:hep-ex/0503048).
- **Study of  $Z\gamma$  events and limits on anomalous  $ZZ\gamma$  and  $Z\gamma\gamma$  couplings in  $p\bar{p}$  collisions at  $\sqrt{s} = 1.96$  TeV**  
V. M. Abazov *et al.* (DØ Collaboration), Phys. Rev. Lett. 95, 051802 (2005),  
(arXiv:hep-ex/0502036).
- **Measurement of inclusive differential cross sections for Upsilon(1S) production in  $p\bar{p}$  collisions at  $\sqrt{s} = 1.96$  TeV**  
V. M. Abazov *et al.* (DØ Collaboration), Phys. Rev. Lett. 94, 232001 (2005),  
(arXiv:hep-ex/0502030).
- **Search for first-generation scalar leptoquarks in  $p\bar{p}$  collisions at  $\sqrt{s} = 1.96$  TeV**  
V. M. Abazov *et al.* (DØ Collaboration), Phys. Rev. D 71, 071104 (2005),  
(arXiv:hep-ex/0412029).
- **First measurement of  $\sigma(p\bar{p} \rightarrow Z) \times \text{Br}(Z \rightarrow \tau\tau)$  at  $\sqrt{s} = 1.96$  TeV**  
V. M. Abazov *et al.* (DØ 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.* (DØ Collaboration), Phys. Rev. Lett. 94, 152002 (2005),  
(arXiv:hep-ex/0411084).
- **A measurement of the ratio of inclusive cross sections  $\sigma(p p \rightarrow Z + \text{b-jet})/\sigma(p p \rightarrow Z + \text{jet})$  at  $\sqrt{s} = 1.96$  TeV**  
V. M. Abazov *et al.* (DØ Collaboration), Phys. Rev. Lett. 94, 161801 (2005),  
(arXiv:hep-ex/0410078).
- **Measurement of the W W production cross section in  $p\bar{p}$  collisions at  $\sqrt{s} = 1.96$  TeV**  
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- **A search for  $Wp\bar{p}$  and  $WH$  production in  $p\bar{p}$  collisions at  $\sqrt{s} = 1.96$  TeV**  
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## 15.7 H1 Publications by the groups of Straumann and Truöl

### Articles

- **A Direct Search for Magnetic Monopoles Produced in Positron-Proton Collisions at HERA**  
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H1-Collaboration\*, A. Aktas *et al.*  
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- **Measurement of Beauty Production at HERA Using Events with Muons and Jets**  
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DESY 05 – 004, hep-ex/050201, Eur.Phys.J. **C41** (2005), 453 - 467.
- **Measurement of Charm and Beauty Photoproduction at HERA Using  $D^*\mu$  Correlations**  
H1-Collaboration\*, A. Aktas *et al.*  
DESY 05 – 040, hep-ex/0503038, Phys.Lett. **B621** (2005), 56 - 71.

- **Measurement of Deeply Virtual Compton Scattering**  
H1-Collaboration\*, A. Aktas *et al.*  
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- **Search for Leptoquark Bosons in  $ep$  Collisions at HERA**  
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- **A Determination of Electroweak Parameters at HERA**  
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- **Measurement of  $F_2^{cc}$  and  $F_2^{bb}$  at Low  $Q^2$  Using the H1-vertex Detector at HERA**  
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- **First Measurement of Charged Current Cross Sections at HERA with Longitudinally Polarized Positrons**  
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- **Forward Jet Production in Deep Inelastic Scattering at HERA**  
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DESY 05 – 135, hep-ex/0508055, Eur.Phys.J.**C** (2006), in print.
- **Elastic  $J/\psi$  Production at HERA**  
H1-Collaboration\*, A. Aktas *et al.*  
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- **Measurement of Event Shape Variables in Deep Inelastic Scattering at HERA**  
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## 15.8 Research group of Prof. P. Truöl <sup>10</sup>

### Articles

- **An Improved Upper Limit on the Decay  $K^+ \rightarrow \pi^+ \mu^+ e^-$**   
E865-Collaboration<sup>†</sup>, Aleksey Sher *et al.*  
hep-ex/0502020, Phys.Rev.**D72** (2005), 012005-1 - 012005-13.
- **First Observation of the Decay  $K^+ \rightarrow e^+ \nu_e \mu^+ \mu^-$**   
E865-Collaboration<sup>†</sup>, H. Ma *et al.*  
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- **Charm, Beauty and Charmonium Production at HERA-B**  
HERA-B-Collaboration, A. Zoccoli *et al.*  
Int. Conf. on Hard and Electromagnetic Probes of High Energy Nuclear Collisions (HP 2004), Ericeira, Portugal, 4-10 Nov 2004; Eur.Phys.J.**C43** (2005), 179-186.

<sup>10</sup>for H1 publications see Sec.15.7

- **Improved Measurement of the  $b\bar{b}$  Production Cross Section in 920 GeV fixed-target Proton-Nucleus Interactions**  
HERA-B-Collaboration, I. Abt *et al.*  
DESY-05-233, hep-ex/0512030, Phys.Rev.**D73** (2006), 052005-1 - 052005-17.
- **High Intensity K experiments**  
A. van der Schaaf, Nucl. Phys. B (Proc. Suppl.) 154 (2006) 12-19.

### Articles in print

- **A search for  $\mu - e$  conversion in muonic gold**  
SINDRUM II Collaboration, W. Bertl, R. Engfer, E.A. Hermes, G. Kurz, T. Kozlowski, J. Kuth, G. Otter, F. Rosenbaum, N.M. Ryskulov, A. van der Schaaf, P. Wintz, I. Zychor,  
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- **Measurement of the  $J/\Psi$  Production Cross Section in 920 GeV/c Fixed-Target Proton-Nucleus Interactions**  
HERA-B-Collaboration, I. Abt *et al.*, DESY-05-232, hep-ex/0512029, Phys.Lett.**B** (2006).

### Invited lectures

- A. van der Schaaf: **KOPIO charged particle vetos**  
K-RARE DECAYS meeting, Frascati National Laboratories, Frascati, Italy, 26 - 27 May, 2005.
- A. van der Schaaf: **High Intensity K experiments**  
High Intensity Frontier Workshop, La Biodola, Isola d'Elba, Italy, May 28 - June 1, 2005.

### Conference presentation

- S. Scheu: **Studies on wrapping materials and light collection geometries in plastic scintillators (poster)**  
4th International Conference on New Developments in Photodetection, Beaune, France, June 19-24, 2005, to appear in Nucl. Inst. Meth. A, number 5211.

### E865-Collaboration

R. Appel, G.S. Atoyian, B. Bassaleck, D.R. Bergman, N. Cheung, S. Dhawan, H. Do, J. Egger, S. Eilerts, W.D. Herold, V.V. Issakov, H. Kaspar, D. Kraus, D. Lazarus, P. Lichard, J. Lowe, J. Lozano, H. Ma, W. Majid, S. Pislak, A.A. Poblaguev, A. Sher, Aleksey Sher, P. Rehak, J.A. Thompson, P. Truöl, and M.E. Zeller

**HERA-B Collaboration**

I. Abt, M. Adams, H. Albrecht, A. Aleksandrov, V. Amaral, A. Amorim, S.J. Aplin, V. Aushev, Y. Bagaturia, V. Balagura, M. Bargiotti, O. Barsukova, J. Bastos, J. Batista, C. Bauer, Th.S. Bauer, A. Belkov, Ar. Belkov, A. Bertin, B. Bobchenko, M. Bocker, A. Bogatyrev, G. Bohm, M. Brauer, M. Bruinsma, M. Bruschi, P. Buchholz, M. Buchler, T. Buran, J. Carvalho, P. Conde, C. Cruse, M. Dam, K.M. Danielsen, M. Danilov, S. De Castro, H. Deppe, X. Dong, H.B. Dreis, V. Egorytchev, K. Ehret, F. Eisele, D. Emeliyanov, S. Essenov, L. Fabbri, P. Faccioli, M. Feuerstack-Raible, J. Flammer, B. Fominykh, M. Funcke, Ll. Garrido, B. Giacobbe, J. Glass, D. Goloubkov, Y. Golubkov, A. Golutvin, I. Golutvin, I. Gorbounov, A. Gorisek, O. Gouchtchine, D.C. Goulart, S. Gradl, W. Gradl, F. Grimaldi, Yu. Guiliitsky, J.D. Hansen, R. Harr, J.M. Hernandez, W. Hofmann, T. Hott, W. Hulsbergen, U. Husemann, O. Igonkina, M. Ispiryan, T. Jagla, C. Jiang, H. Kapitza, S. Karabekyan, P. Karchin, N. Karpenko, S. Keller, J. Kessler, F. Khasanov, Yu. Kiryushin, K.T. Knopfle, H. Kolanoski, S. Korpar, C. Krauss, P. Kreuzer, P. Krizan, D. Krucker, S. Kupper, T. Kvaratskheliia, A. Lanyov, K. Lau, B. Lewendel, T. Lohse, B. Lomonosov, R. Manner, S. Masciocchi, I. Massa, I. Matchikhilian, G. Medin, M. Medinnis, M. Mevius, A. Michetti, Yu. Mikhailov, R. Mizuk, R. Muresan, S. Nam, M. zur Nedden, M. Negodaev, M. Norenberg, S. Nowak, M.T. Nunez Pardo de Vera, M. Ouchrif, F. Ould-Saada, C. Padilla, D. Peralta, R. Pernack, R. Pestotnik, M. Piccinini, M.-A. Pleier, M. Poli, V. Popov, A. Pose, D. Pose, S. Prystupa, V.M. Pugatch, Y. Pylypchenko, J. Pyrlík, K. Reeves, D. Rensing, H. Rick, I. Riu, P. Robmann, V. Rybnikov, F. Sanchez, A. Sbrizzi, M. Schmelling, B. Schmidt, A. Schreiner, H. Schroder, A.-J. Schwartz, A.-S. Schwarz, B. Schwenninger, B. Schwingenheuer, F. Sciacca, N. Semprini-Cesari, J. Shiu, S. Shuvalov, L. Silva, K. Smirnov, L. Sozuer, S. Solunin, A. Somov, S. Somov, J. Spengler, R. Spighi, A. Spiridonov, A. Stanovnik, M. Staric, C. Stegmann, H.S. Subramania, M. Symalla, I. Tikhomirov, M. Titov, I. Tsakov, U. Uwer, C. van Eldik, Yu. Vassiliev, M. Villa, A. Vitale, I. Vukotic, H. Wahlberg, A.H. Walenta, M. Walter, J.J. Wang, D. Wegener, U. Werthenbach, H. Wolters, R. Wurth, A. Wurz, Yu. Zaitsev, M. Zavertyaev, T. Zeuner, A. Zhelezov, Z. Zheng, R. Zimmermann, T. Zivko