

# 19 Publications

## 19.1 Elementary particles and their interactions

### 19.1.1 Theory of Elementary particles

#### Articles

- Minimal muon anomalous magnetic moment  
C. Biggio and M. Bordone, JHEP 1502 (2015) 099.
- ZZ production at hadron colliders in NNLO QCD  
F. Cascioli, T. Gehrmann, M. Grazzini, S. Kallweit, P. Maierhöfer *et al.*, Phys.Lett. B735 (2014) 311-313.
- Two-loop splitting amplitudes and the single-real contribution to inclusive Higgs production at N<sup>3</sup>LO  
C. Duhr and T. Gehrmann and M. Jaquier, JHEP 1502 (2015) 077.
- Higgs boson gluon-fusion production beyond threshold in N<sup>3</sup>LO QCD  
C. Anastasiou, C. Duhr, F. Dulat, E. Furlan, T. Gehrmann *et al.*, JHEP 1503 (2015) 091.
- Precise QCD predictions for the production of Higgs + jet final states  
X. Chen, T. Gehrmann, E.W.N. Glover and M. Jaquier, Phys.Lett. B740 (2015) 147-150.
- W<sup>+</sup>W<sup>-</sup> Production at Hadron Colliders in Next to Next to Leading Order QCD  
T. Gehrmann, M. Grazzini, S. Kallweit, P. Maierhöfer, A. von Manteuffel *et al.*, Phys.Rev.Lett. 21 113 (2014) 212001.
- The  $Hb\bar{b}$  form factor to three loops in QCD  
T. Gehrmann and D. Kara, JHEP 1409 (2014) 174.
- The two-loop master integrals for  $q\bar{q} \rightarrow VV$   
T. Gehrmann, A. Manteuffel, L. Tancredi and E. Weihs, JHEP 1406 (2014) 032.
- Calculation of the transverse parton distribution functions at next-to-next-to-leading order  
T. Gehrmann, T. Luebbert and L.L. Yang, JHEP 1406 (2014) 155.
- Higgs boson gluon-fusion production at threshold in N<sup>3</sup>LO QCD  
C. Anastasiou, C. Duhr, F. Dulat, E. Furlan, T. Gehrmann *et al.*, Phys.Lett. B737 (2014) 325-328.
- EERAD3: Event shapes and jet rates in electron-positron annihilation at order  $\alpha_s^3$   
A. Gehrmann-De Ridder, T. Gehrmann, E.W.N. Glover and G. Heinrich, Comput.Phys.Commun. 185 (2014) 3331.
- BLM Scale Fixing in Event Shape Distributions  
T. Gehrmann, N. Häfliger and P.F. Monni, Eur.Phys.J. 6 C74 (2014) 2896.
- Transverse-momentum resummation for heavy-quark hadroproduction  
S. Catani, M. Grazzini and A. Torre, Nucl.Phys. B890 (2014) 518-538.
- Associated ZH production at hadron colliders: the fully differential NNLO QCD calculation  
G. Ferrera, M. Grazzini and F. Tramontano, Phys.Lett. B740 (2015) 51-55.
- Threshold resummation at N<sup>3</sup>LL accuracy and soft-virtual cross sections at N<sup>3</sup>LO  
S. Catani, L. Cieri, D. de Florian, G. Ferrera and M. Grazzini, Nucl.Phys. B888 (2014) 75-91.
- Resummation of the transverse-energy distribution in Higgs boson production at the Large Hadron Collider  
M. Grazzini, A. Papaefstathiou, Jennifer M. Smillie and B.R. Webber, JHEP 1409 (2014) 056.
- Higher-order QCD effects for associated WH production and decay at the LHC  
G. Ferrera, M. Grazzini and F. Tramontano, JHEP 1404 (2014) 039.
- NLO electroweak automation and precise predictions for W+multijet production at the LHC  
S. Kallweit, J.M. Lindert, P. Maierhöfer, S. Pozzorini and M. Schönherr, JHEP 1504 (2015) 012.

- Pseudo-observables in Higgs decays  
M. Gonzalez-Alonso, A. Greljo, G. Isidori and D. Marzocca, Eur.Phys.J. 3 C75 (2015) 128.
- Softened Gravity and the Extension of the Standard Model up to Infinite Energy  
G.F. Giudice, G. Isidori, A. Salvio and A. Strumia, JHEP 1502 (2015) 137.
- LHC Tests of Light Neutralino Dark Matter without Light Sfermions  
L. Calibbi, J.M. Lindert, T. Ota and Y. Takanishi, JHEP 1411 (2014) 106.
- Boundary terms in quantum field theory and the spin structure of QCD  
P. Lowdon, Nucl.Phys. B889 (2014) 801-816.
- NNLO QCD subtraction for top-antitop production in the  $q\bar{q}$  channel  
G. Abelof, Aude Gehrmann-De Ridder, P. Maierhöfer and S. Pozzorini, JHEP 1408 (2014) 035.
- Higgs Boson pair production merged to one jet  
P. Maierhöfer and A. Papaefstathiou, JHEP 1403 (2014) 126.
- NLO matching for  $t\bar{t}b\bar{b}$  production with massive  $b$ -quarks  
F. Cascioli, P. Maierhöfer, N. Moretti, S. Pozzorini and F. Siegert, Phys.Lett. B734 (2014) 210-214.
- Standard model Higgs boson pair production in the  $(b\bar{b})(b\bar{b})$  final state  
D.E. Ferreira de Lima, A. Papaefstathiou and M. Spannowsky, JHEP 1408 (2014) 030.
- Higgs boson to di-tau channel in Chargino-Neutralino searches at the LHC  
A. Papaefstathiou, K. Sakurai and M. Takeuchi, JHEP 1408 (2014) 176.
- The  $\mu \rightarrow e\gamma$  decay in a systematic effective field theory approach with dimension 6 operators  
G.M. Pruna and A. Signer, JHEP 1410 (2014) 14.
- Renormalization-group improved fully differential cross sections for top pair production  
A. Broggio, A.S. Papanastasiou and A. Signer, JHEP 1410 (2014) 98.
- The infrared structure of QCD amplitudes and  $H \rightarrow gg$  in FDH and DRED  
C. Gnendiger, A. Signer and D. Stöckinger, Phys.Lett. B733 (2014) 296-304.
- The automated computation of tree-level and next-to-leading order differential cross sections, and their matching to parton shower simulations  
J. Alwall, R. Frederix, S. Frixione, V. Hirschi, F. Maltoni *et al.*, JHEP 1407 (2014) 079.
- Higgs pair production at the LHC with NLO and parton-shower effects  
R. Frederix, S. Frixione, V. Hirschi, F. Maltoni, O. Mattelaer *et al.*, Phys.Lett. B732 (2014) 142-149.
- Higgs production in association with bottom quarks  
M. Wiesemann, R. Frederix, S. Frixione, V. Hirschi, F. Maltoni, and P. Torrielli, JHEP 1502 (2015) 132.
- Transverse momentum resummation for Higgs production via gluon fusion in the MSSM  
R.V. Harlander, H. Mantler (CERN) and M. Wiesemann, JHEP 1411 (2014) 116.
- Finite top-mass effects in gluon-induced Higgs production with a jet-veto at NNLO  
T. Neumann and Marius Wiesemann, JHEP 1411 (2014) 150.
- Higgs production in bottom quark annihilation: Transverse momentum distribution at NNLO+NNLL  
R.V. Harlander, A. Tripathi and M. Wiesemann, Phys.Rev. D90 (2014) 1, 015017.

#### PhD Theses

- Methods for Multiloop Computations and their Application to Vector Boson Pair Production in NNLO QCD  
Lorenzo Trancredi, PhD thesis, 03.07.2014
- A new Generator of One-loop Scattering Amplitudes for Precision Multi-Particle Simulations at the LHC  
Fabio Cascioli, PhD thesis, 03.07.2014

- Soft-gluon resummation for four-parton hard scattering processes  
Alessandro Torre, PhD thesis, 01.09.2014

## Oral Presentations

- S. Borowka: Two-loop computations with SecDec and their application within the MSSM  
Seminar, Freiburg, Germany, 11.11.2014
- S. Borowka: News on momentum-dependent 2L QCD contributions to CP-even Higgs-boson masses in the rMSSM  
KUTS Workshop, Hamburg, Germany, 20.10.2014
- T. Gehrmann: NNLO correction to dejet production in DIS  
DESY workshop on physics with HERA data, Hamburg, 11 November 2014
- T. Gehrmann: Antenna Subtraction Technique  
LHCPhenoNet School, Debrecen, Hungary, 23-24 June 2014
- T. Gehrmann: Precision calculations for hadron collider observables  
SFB workshop, Karlsruhe, 18 September 2014
- T. Gehrmann: Introduction to QCD  
TASI 2014 Summer School, University of Colorado, Boulder, 2-6 June 2014
- M. Grazzini: Perturbative QCD calculations for the LHC  
2nd Warsaw Spring Workshop, Warsaw, 8 April 2014
- M. Grazzini: Vector boson pair production at NNLO  
Loops and Legs in Quantum Field Theory, Weimar, 29 April 2014
- M. Grazzini: NNLO calculations and resummation  
LHCPhenoNet School, Debrecen, Hungary, 23-24 June 2014
- M. Grazzini: Vector boson pair production at NNLO  
workshop on EW precision physics at the LHC, CERN, 30 June 2014
- M. Grazzini: The Higgs  $p_T$  spectrum in the SM and beyond  
Higgs Couplings 2014, Torino, 1 October 2014
- M. Grazzini: WW and ZZ production at NNLO  
Higgs (N)NLO MC and Tools Workshop for LHC RUN-2, CERN, Geneva, 18 December 2014
- G. Isidori: Looking for physics beyond the SM via the Flavour Window  
ICHEP, Valencia (Spain), 2-9 July 2014
- G. Isidori: Quark and lepton Yukawa couplings: symmetries vs. dynamics  
InvisiblesWorkshop 2014, Paris (France), 14-18 July 2014
- G. Isidori: Interpretation of low-energy experiments  
Physics Landscape after the Higgs discovery, flavor WE-Heraeus-Seminar, Bad Honnef (Germany), 4-7 Nov 2014
- M. Jaquier: Precision calculation of Higgs plus one jet at NNLO  
PhD talks, Zuerich, 12.09.2014
- S. Kallweit: A unified NLO description of top-pair and associated  $Wt$  production  
Loops and Legs, Weimar 29.04.2014
- S. Kallweit: A unified NLO description of top-pair and associated  $Wt$  production  
MIAPP summer institute "Challenges, Innovations and Developments in Precision Calculations for the LHC",  
Munich, 11.8.2014
- S. Kallweit: NNLO QCD corrections to vector-boson pair production  
Seminar at JGU Mainz, 11 July 2014

- J. Lindert: Collider limits on light neutralino dark matter  
Planck 2014, Paris, France, 28 May 2014
- J. Lindert: QCD and electroweak corrections with OpenLoops  
LHCPhenoNet Final Meeting, Berlin, Germany, November 26, 2014
- P. Lowdon: The proton spin crisis and form factors  
Sinergia Project Meeting, Bern, Switzerland, 09.09.2014
- P. Maierhöfer: Next-to-leading order simulations with Sherpa+OpenLoops  
Loops and Legs in Quantum Field Theory, Weimar, 29 April 2014
- P. Maierhöfer: Using OpenLoops for one-loop scattering amplitudes  
HP2: High precision for hard processes, Firenze, 3 September 2014
- D. Marzocca: Charged lepton contribution to neutrino mixing and stable fermion mass matrices  
Seminar at the Scuola Normale Superiore di Pisa, Italy, 22 October 2014
- S. Pozzorini: Scattering Amplitudes and Top phenomenology with OpenLoops  
Seminar at RWTH Aachen, 5 June 2014
- S. Pozzorini: Recent results on  $t\bar{t}(bb)$  backgrounds  
7th Workshop of the LHC Higgs Cross Section Working Group, CERN, Geneva, 12 June 2014
- S. Pozzorini: Applications of OpenLoops to Top and Higgs Physics  
Loopfest XIII, New York, 18 June 2014
- S. Pozzorini: Recent progress in Top Physics  
QCD@LHC, Suzdal, Russia, 25 August 2014
- S. Pozzorini: New generators for top physics and EW corrections for the HL-LHC  
Top2014, Cannes, France, 3 Oct 2014
- S. Pozzorini:  $t\bar{t}$ +jets and  $t\bar{t}V$ +jets in Sherpa+OpenLoops  
Higgs (N)NLO MC and ToolsWorkshop for LHC RUN-2, CERN, Geneva, 18 December 2014
- D. Rathlev: Status of  $VV'$  production in NNLO QCD  
Loopfest XIII, New York, 20 June 2014
- D. Rathlev: Diboson production in NNLO QCD  
HP2, Florenz, 4.9.2014
- D. Rathlev: Diboson production in NNLO QCD  
Seminar, Göttingen, 21.11.2014
- D. Rathlev: Diboson production in NNLO QCD  
Terascale Meeting, Hamburg, 2.12.2014
- D. Rathlev: Diboson production in NNLO QCD  
Seminar, Aachen, 4.12.2014
- D. Rathlev: Diboson production in NNLO QCD  
Seminar, Würzburg, 11.12.2014
- H. Sargsyan:  $q\bar{q}$  subtraction for top-quark pair production at hadron colliders  
LHCPhenonet final meeting 2014, 25.11.2014
- H. Sargsyan: Higgs boson transverse momentum in the Standard Model  
Higgs (N)NLO MC and ToolsWorkshop for LHC RUN-2, CERN, Geneva, 17.12.2014
- T. Schmidt: Schwellenresummation in der Higgs Boson Produktion via Gluon Fusion  
46. Herbstschule für Hochenergiephysik, Maria Laach, 2.-12. September 2014

- M. Schoenherr: Electroweak corrections for LHC physics  
Seminar, Freiburg, Deutschland, 18.11.2014
- M. Schoenherr: Higgs production at NLO in Sherpa  
Higgs+Jets workshop, Durham, England, 09.12.2014
- A. Signer: Effective theory approach to top quark production at hadron colliders  
Seminar University of Wien, 29 April 2014
- A. Signer: Searching high and low for physics beyond the Standard Model  
Colloquium LPSC Grenoble, 22 May 2014
- A. Signer: Effective theory approach to top quark production at hadron colliders  
Seminar University Wurzburg, 5 June 2014
- A. Signer: RG improved fully differential top pair cross sections at hadron colliders  
MIAPP Top quark workshop, Munich, 11 August 2014
- A. Signer: Top quark physics at a linear collider  
5th Linear Collider Physics School, Frauenchiemsee, 13 August 2014
- A. Signer: The impact of a non-vanishing nEDM  
Workshop nEDM2014, Ascona, 2 November 2014
- L. Tancredi: Lectures on Methods for multi-loop computations  
Bhubaneswar, India, 4-9 March 2014
- L. Tancredi: Schouten identities and the two-loop sunrise graph  
Loops and Legs, Weimar 01.05.2014
- L. Tancredi: Schouten identities and the two-loop sunrise graph  
New frontiers in Theoretical Physics, Cortona, 01.06.2014
- L. Tancredi: Methods for multi-loop calculations and vector boson pair production in NNLO QCD  
TTP Seminar, Karlsruhe, 13.06.2014
- A. Torre: Soft-gluon resummation for four-parton hard-scattering processes  
LoopFest XIII, New York, 19 June 2014
- M. Wiesemann:  
Supersymmetric Higgs production: Transverse momentum resummation in bottom annihilation at NNLO+NNLL  
LHCPhenoNet 2nd Fellows meeting, Paris (France), June 6, 2014
- M. Wiesemann: Analytic resummation for Higgs  $p_T$  in  $gg \rightarrow H$ : Choosing the resummation scale for the bottom  
MSSM  $ggH$  Higgs  $p_T$  meeting, CERN (Switzerland), June 17, 2014
- M. Wiesemann: Higgs production in bottom annihilation: Transverse momentum spectrum at NNLO+NNLL  
LoopFest XIII, New York (USA), June 19, 2014
- M. Wiesemann: Higgs production in association with bottom quarks  
Collider Cross Talk, CERN (Switzerland), October 23, 2014
- M. Wiesemann: Finite top-mass effects for Higgs production with a jet-veto at NNLO  
LHCPhenoNet Final Meeting, Berlin (Germany), November 24, 2014
- M. Wiesemann: Higgs production in the MSSM: Transverse momentum resummation  
HP2 : High Precision for Hard Processes, Florence (Italy), September 5, 2014
- M. Wiesemann:  $bbH$ : introduction and theoretical status  
 $bbH$  cross-group kick off meeting, CERN (Switzerland), November 28, 2014
- M. Wiesemann: Higgs production in association with bottom quarks  
Higgs (N)NLO MC and ToolsWorkshop for LHC RUN-2, CERN (Switzerland), December 19, 2014

## 19.1.2 Astrophysics and General Relativity

### Articles

- Testing scalar-tensor theories and parametrized post-Newtonian parameters in Earth orbit  
A. Schäfer, R. Angéilil, R. Bondarescu, P. Jetzer and A. Lundgren, *Phys. Rev. D* 90 (2014) 123005.
- Quantum tests of the Einstein Equivalence Principle with the STE-QUEST space mission  
B. Altschul, Q. G. Bailey, L. Blanchet, K. Bongs, P. Bouyer, L. Cacciapuoti, S. Capozziello, N. Gaaloul, D. Giulini, J. Hartwig, L. Iess, P. Jetzer, A. Landragin, E. Rasel, S. Reynaud, S. Schiller, C. Schubert, F. Sorrentino, U. Sterr, J. D. Tasson, G. M. Tino, P. Tuckey and Peter Wolf, *Adv. Space Res.* 55 (2015) 501.
- Quasi-universal properties of neutron star mergers  
S. Bernuzzi, A. Nagar, S. Balmelli, T. Dietrich and M. Ujevic, *Phys. Rev. Lett.* 112 (2014) 201101.
- Gravitational waves from spinning compact binaries in hyperbolic orbits  
L. De Vittori, A. Gopakumar, A. Gupta and P. Jetzer, *Phys. Rev. D* 90 (2014) 124066.
- Planck confirmation of the disk and halo rotation of M31  
F. De Paolis, V. Gurzadyan, A. Nucita, G. Ingrosso, A. Kashin, H. Khachatryan, S. Mirzoyan, E. Poghosian, Ph. Jetzer, A. Quadir and D. Vetrugno, *Astron. and Astrophys.* 565 (2014) L3.
- STE-QUEST - Test of the Universality of Free Fall Using Cold Atom Interferometry  
D.N. Aguilera, H. Ahlers, B. Battelier, A. Bawamia, A. Bertoldi, R. Bondarescu, K. Bongs, P. Bouyer, C. Braxmaier, L. Cacciapuoti, C. Chaloner, M. Chwalla, W. Ertmer, M. Franz, N. Gaaloul, M. Gehler, D. Gerardi, L. Gesa, N. Gürlebeck, J. Hartwig, M. Hauth, O. Hellmig, W. Herr, S. Herrmann, A. Heske, A. Hinton, P. Ireland, Ph. Jetzer, U. Johann, M. Krutzik, A. Kubelka, C. Lämmerzahl, A. Landragin, I. Lloro, D. Massonnet, I. Mateos, A. Milke, M. Nofrarias, M. Oswald, A. Peters, K. Posso-Trujillo, E. Rasel, E. Rocco, A. Roura, J. Rudolph, W. Schleich, C. Schubert, T. Schuldt, S. Seidel, K. Sengstock, C.F. Sopena, F. Sorrentino, D. Summers, G.M. Tino, C. Trenkel, N. Uzunoglu, W. von Klitzing, R. Walser, T. Wendrich, A. Wenzlawski, P. Wessels, A. Wicht, E. Wille, M. Williams, P. Windpassinger, and N. Zahzam, *Class. and Quantum Gravity* 31 (2014) 115010.
- Limits on compact baryonic dark matter from gravitational microlensing  
P. Jetzer, *Phys. Scr.* 89 (2014) 084009.
- Gravitational wave detection from space  
P. Jetzer, *EPJ Web. Conf.* 71 (2014) 00060.
- Measuring polarization in microlensing events  
G. Ingrosso, S. Calchi Novati, F. De Paolis, P. Jetzer, A. Nucita and F. Strafella, *Mont. Not. R. Astron. Soc.* 446 (2015) 1090.
- Memory effect from spinning unbound binaries  
L. De Vittori, A. Gopakumar, A. Gupta and P. Jetzer, 2014 Sant Cugat Forum on Astrophysics, Astrophysics and Space Science, Proceedings 40, C. Sopena Editor, (2015) 259.
- Supermassive Black Hole Tests of General Relativity with eLISA  
C. Huwyler, Ed. Porter and P. Jetzer, *Phys. Rev. D* 91 (2015) 024037.
- Effective-One-Body Hamiltonian with next-to-leading order spin-spin coupling  
S. Balmelli and P. Jetzer, *Phys. Rev.* 91 (2015) 064011.
- Gravitational lens recovery with GLASS: measuring the mass profile and shape of a lens  
J. P. Coles, J.I. Read, and P. Saha, *MNRAS*, vol. 445, pp. 2181–2197, Dec. 2014.
- Gravitational lens modelling in a citizen science context  
R. Küng, P. Saha, A. More, E. Baeten, J. Coles, C. Cornen, C. Macmillan, P. Marshall, S. More, J. Odermatt, A. Verma, and J.K. Wilcox, *MNRAS*, vol. 447, pp. 2170–2180, Mar. 2015.
- Mass-galaxy offsets in Abell 3827, 2218 and 1689: intrinsic properties or line-of-sight substructures?  
I. Mohammed, J. Liesenborgs, P. Saha, and L.L.R. Williams, *MNRAS*, vol. 439, pp. 2651–2661, Apr. 2014.

- Lensing time delays as a substructure constraint: a case study with the cluster SDSS J1004+4112  
I. Mohammed, P. Saha, and J. Liesenborgs, PASJ, vol. 67, pp. 21, Mar. 2015.
- Clocks around Sgr A\*  
R. Angéilil and P. Saha, MNRAS, vol. 444, pp. 3780–3791, Nov. 2014.
- Feasibility of observing Hanbury Brown and Twiss phase  
T. Wentz and P. Saha, MNRAS, vol. 446, pp. 2065–2072, Jan. 2015.

#### PhD Thesis

- Testing General Relativity with Gravitational Waves  
Cédric Huwyler, PhD thesis, 3.12.2014

#### Oral Presentations

- Simone Balmelli: Quasi-universal properties of neutron star mergers  
LISA Symposium X, Gainesville (USA), May 18-23 2014.
- Ruxandra Bondarescu: Probing general relativity, alternative theories of gravity, and relativistic geodesy with atomic clocks  
Invited Seminars at Hebrew University, Tel-Aviv University, Weizmann Institute and Technion in Israel, 22nd, 24th, 25th, and 28th December 2014.
- Ruxandra Bondarescu: Testing General Relativity and Alternative Theories of Gravity with Atomic Clocks  
3rd International Conference on New Frontiers in Physics, Creta (Greece), July 28-6 August 2014.
- Lorenzo De Vittori: The remains of a spinning, hyperbolic encounter  
LISA Symposium X, Gainesville (USA), May 18-23 2014.
- Lorenzo De Vittori: Memory effect from spinning unbound binaries  
Sant Cugat Forum on Astrophysics, Sant Cugat (Spain), April 21-25 2014.
- Philippe Jetzer: Gravitational Red-Shift Explorer (GRESE)  
2nd Workshop, Planning for a joint scientific space mission, Chinese Academy of Sciences (CAS) - European Space Agency (ESA), Copenhagen (Denmark), 23-24 September 2014.
- Philippe Jetzer: Gravitational wave detection from space  
International Conference on Relativistic Astrophysics, Lahore (Pakistan), 10-14 February 2015.

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### 19.1.3 GERDA

#### Articles

- Production, characterization and operation of  $^{76}\text{Ge}$  enriched BEGe detectors in GERDA  
M. Agostini, M. Allardt, E. Andreotti, A.M. Bakalyarov, M. Balata, I. Barabanov, N. Barros, L. Baudis, C. Bauer *et al.*  
(GERDA Collaboration), Eur.Phys.J. C75 (2015) 2, 39.

#### Lectures and oral presentations

- M. Walter: The GERDA Experiment for the Search of Neutrinoless Double Beta Decay  
Discrete 2014, London, 2.- 6. December 2014.
- L. Baudis: GERDA and the nature of neutrinos  
Physics Colloquium, Nikhef and University of Amsterdam, Amsterdam, October 24, 2014.

## 19.1.4 XENON/DARWIN

### Articles

- WIMP Dark Matter Direct-Detection Searches in Noble Gases  
Laura Baudis, *Physics of the Dark Universe* 4 50 (2014).
- Conceptual design and simulation of a water Cherenkov muon veto for the XENON1T experiment  
E. Aprile *et al.* (XENON1T Collaboration) *JINST* 9, P11006 (2014).
- First Axion Results from the XENON100 Experiment  
E. Aprile, F. Agostini, M. Alfonsi, K. Arisaka, F. Arneodo, M. Auger, C. Balan, P. Barrow, L. Baudis, B. Bauermeister *et al.*, *Phys. Rev. D* 90, 062009 (2014).
- Observation and applications of single-electron charge signals in the XENON100 experiment  
E. Aprile, F. Agostini, M. Alfonsi, K. Arisaka, F. Arneodo, M. Auger, C. Balan, P. Barrow, L. Baudis, B. Bauermeister *et al.*, *J.Phys. G*41 (2014) 035201.

### Lectures and oral presentations

- L. Baudis: Dark detection of particle dark matter with underground detectors  
Physics Colloquium, Max Planck Institute for Physics, January 20, 2015.
- L. Baudis: DARWIN: an introduction  
DARWIN 2015: towards future dark matter experiments, WIS, Rehovot, January 7, 2015.
- L. Baudis: Dark detection of particle dark matter with underground detectors  
Physics Colloquium, Max Planck Institute for Plasma Physics, Munich, November 21, 2014.
- L. Baudis: Dark matter detection review  
NNN 2014, Paris, November 5, 2014.
- L. Baudis: Dark matter detection: experimental overview  
26th Solvay Conference on Physics (Astrophysics and Cosmology), Brussels, October 11, 2014.
- L. Baudis: Dark matter searches: where do we stand, where are we going?  
SIF Congresso Nazionale, Pisa, September 25, 2014.
- L. Baudis: Direct detection of WIMPs  
COSMO 2014; Chicago, August 28, 2014.
- L. Baudis: Will we detect dark matter soon?  
Ascona, July 8, 2014.
- L. Baudis: XENON and DARWIN  
SWAPS meeting, Cartigny, June 12, 2014.
- L. Baudis: Direct dark matter detection in the Milky Way  
Physics Colloquium, Imperial College, London, April 30, 2014.
- G. Kessler: XENON100 and XENON1T - Dark Matter Search with Liquid Xenon  
PANIC2014, Hamburg, Germany, 25. August 2014.
- A. Kish: Direct Dark Matter Detection with XENON and DARWIN  
TIPP2014, Beurs Van Berlage, Amsterdam, The Netherlands, June 4 2014.



## 19.1.5 DAMIC

## Lectures and oral presentations

- B. Kilminster: DAMIC results from Snolab  
10th Patras Workshop on Axions, WIMPs, and WISPs, CERN (Switzerland), July 3, 2014.
- B. Kilminster: The shape of the Higgs boson  
Prospects and Precision of Higgs physics with 13 TeV at the LHC, Galileo Galilei Institute, Firenze (Italy), Sept. 14 2014,
- B. Kilminster: DAMIC: a novel approach for DM searches with CCDs  
Strategy Workshop on Astroparticle in Switzerland 2014, Geneva (Switzerland), June 11, 2014.

## 19.1.6 CTA

## Conference contributions

- Q. Weitzel *et. al*: The FlashCam Camera for the Medium-Sized Telescopes of CTA  
Technology and Instrumentation in Particle Physics 2014 (TIPP2014), Amsterdam (Netherlands), PoS(TIPP2014)142.
- G. Pühlhofer *et. al*: Status of the photomultiplier-based FlashCam camera for the Cherenkov Telescope Array  
SPIE.Astronomical Telescopes + Instrumentation (SPIE2014), Montreal (Canada), doi:10.1117/12.2056837.
- A. Gadola *et. al*: FlashCam: a novel Cherenkov telescope camera with continuous signal digitization  
Topical Workshop on Electronics for Particle Physics (TWEPP2014), Aix en Provence (France), doi:10.1088/1748-0221/10/01/C01014.

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## Oral presentations

- A. Gadola: FlashCam: A novel camera for the Cherenkov Telescope Array  
SPS Annual Meeting , Fribourg, 02.07.2014.

## 19.1.7 H1

The 2014 H1 Collaboration has 141 members including K. Müller, P. Robmann, U. Straumann and P. Truöl.

## Articles

- Measurement of Feynman- $x$  Spectra of Photons and Neutrons in the Very Forward Direction in Deep-Inelastic Scattering at HERA  
H1-Collaboration, V. Andreev *et al.*, Eur. Phys. J. C **74** (2014), 2915.
- Measurement of Multijet Production in  $ep$  Collisions at High  $Q^2$  and Determination of the Strong Coupling  $\alpha_s$   
H1-Collaboration, V. Andreev *et al.*, Eur. Phys. J. C **75** (2015), 65.
- Measurement of Dijet Production in Diffractive Deep-Inelastic  $ep$  Scattering at HERA  
H1-Collaboration, V. Andreev *et al.*, JHEP **03** (2015), 092.

## Articles in press

- Combination of Differential  $D^{*\pm}$  Cross Section Measurements in Deep-Inelastic  $ep$  Scattering at HERA  
H1- and ZEUS-Collaboration, H. Abramowicz *et al.*, JHEP (2015), in print.
- Diffractive Dijet Production with a Leading Proton in  $ep$  Collisions at HERA  
H1-Collaboration, V. Andreev *et al.*, JHEP (2015), in print.

### 19.1.8 LHCb

#### Articles

- Measurement of  $B_c^+$  production in proton-proton collisions at  $\sqrt{s} = 8$  TeV  
LHCb-Collaboration, R. Aaij *et al.*, Phys. Rev. Lett. **114** (2015) 132001.
- Study of the rare  $B_s^0$  and  $B^0$  decays into the  $\pi^+\pi^-\mu^+\mu^-$  final state  
LHCb-Collaboration, R. Aaij *et al.*, Phys. Lett. B **743** (2015) 46.
- LHCb Detector Performance  
LHCb-Collaboration, R. Aaij *et al.*, Int. J. Mod. Phys. A **30** (2015) 1530022.
- Measurement of the inelastic pp cross-section at a centre-of-mass energy of  $\sqrt{s} = 7$  TeV  
LHCb-Collaboration, R. Aaij *et al.*, JHEP **1502** (2015) 129.
- Measurement of the lifetime of the  $B_c^+$  meson using the  $B_c^+ \rightarrow J/\psi\pi^+$  decay mode  
LHCb-Collaboration, R. Aaij *et al.*, Phys. Lett. B **742** (2015) 29.
- Observation of two new  $\Xi_b^-$  baryon resonances  
LHCb-Collaboration, R. Aaij *et al.*, Phys. Rev. Lett. **114** (2015) 6, 062004.
- Precision measurement of CP violation in  $B_s^0 \rightarrow J/\psi K^+K^-$  decays  
LHCb-Collaboration, R. Aaij *et al.*, Phys. Rev. Lett. **114** (2015) 4, 041801.
- Measurement of the CP-violating phase  $\beta$  in  $B^0 \rightarrow J/\psi\pi^+\pi^-$  decays and limits on penguin effects  
LHCb-Collaboration, R. Aaij *et al.*, Phys. Lett. B **742** (2015) 38.
- Measurement of the Z+b-jet cross-section in pp collisions at  $\sqrt{s} = 7$  TeV in the forward region  
LHCb-Collaboration, R. Aaij *et al.*, JHEP **1501** (2015) 064.
- Study of  $\eta - \eta'$  mixing from measurement of  $B_{(s)}^0 \rightarrow J/\psi\eta^{(\prime)}$  decay rates  
LHCb-Collaboration, R. Aaij *et al.*, JHEP **1501** (2015) 024.
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LHCb-Collaboration, R. Aaij *et al.*, Phys. Lett. B **740** (2015) 158.
- Precision luminosity measurements at LHCb  
LHCb-Collaboration, R. Aaij *et al.*, JINST **9** (2014) 12, P12005.
- Measurement of the semileptonic CP asymmetry in  $B^0 - \bar{B}^0$  mixing  
LHCb-Collaboration, R. Aaij *et al.*, Phys. Rev. Lett. **114** (2015) 041601.
- Precision Measurement of the Mass and Lifetime of the  $\Xi_b^-$  Baryon  
LHCb-Collaboration, R. Aaij *et al.*, Phys. Rev. Lett. **113** (2014) 24, 242002.
- Search for the lepton flavour violating decay  $\tau \rightarrow \mu^-\mu^+\mu^-$   
LHCb-Collaboration, R. Aaij *et al.*, JHEP **1502** (2015) 121.
- Measurement of the CP-violating phase  $\phi_s$  in  $\bar{B}_s^0 \rightarrow D_s^+D_s^-$  decays  
LHCb-Collaboration, R. Aaij *et al.*, Phys. Rev. Lett. **113** (2014) 21, 211801.
- Measurement of the  $\chi_b(3P)$  mass and of the relative rate of  $\chi_{b1}(1P)$  and  $\chi_{b2}(1P)$  production  
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- Measurements of CP violation in the three-body phase space of charmless  $B^\pm$  decays  
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- Measurement of the forward W boson cross-section in pp collisions at  $\sqrt{s} = 7$  TeV  
LHCb-Collaboration, R. Aaij *et al.*, JHEP **1412** (2014) 079.

- Measurement of the CKM angle  $\gamma$  using  $B^\pm \rightarrow DK^\pm$  with  $D \rightarrow K_S^0 \pi^+ \pi^-, K_S^0 K^+ K^-$  decays  
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- Search for  $CP$  violation using  $T$ -odd correlations in  $D^0 \rightarrow K^+ K^- \pi^+ \pi^-$  decays  
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- Measurement of the track reconstruction efficiency at LHCb  
LHCb-Collaboration, R. Aaij *et al.*, JINST **10** (2015) 02, P02007.
- First observations of the rare decays  $B^+ \rightarrow K^+ \pi^+ \pi^- \mu^+ \mu^-$  and  $B^+ \rightarrow \phi K^+ \mu^+ \mu^-$   
LHCb-Collaboration, R. Aaij *et al.*, JHEP **1410** (2014) 064.
- Measurement of  $CP$  asymmetries in the decays  $B^0 \rightarrow K^{*0} \mu^+ \mu^-$  and  $B^+ \rightarrow K^+ \mu^+ \mu^-$   
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- First observation of a baryonic  $B_c^+$  decay  
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- Measurement of the  $\bar{B}^0 - B^0$  and  $\bar{B}_s^0 - B_s^0$  production asymmetries in  $pp$  collisions at  $\sqrt{s} = 7$  TeV  
LHCb-Collaboration, R. Aaij *et al.*, Phys. Lett. B **739** (2014) 218.
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- 92 - Dalitz plot analysis of  $B_s^0 \rightarrow \bar{D}^0 K^- \pi^+$  decays  
LHCb-Collaboration, R. Aaij *et al.*, Phys. Rev. D **90** (2014) 7, 072003.
- Observation of  $B_s^0 \rightarrow K^{*\pm} K^\mp$  and evidence for  $B_s^0 \rightarrow K^{*-} \pi^+$  decays  
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- Measurement of  $CP$  violation and constraints on the CKM angle  $\gamma$  in  $B^\pm \rightarrow DK^\pm$  with  $D \rightarrow K_S^0 \pi^+ \pi^-$  decays  
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- Measurement of  $CP$  asymmetry in  $B_s^0 \rightarrow D_s^\mp K^\pm$  decays  
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- Observation of charmonium pairs produced exclusively in  $pp$  collisions  
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- Evidence for  $CP$  violation in  $B^+ \rightarrow p \bar{p} K^+$  decays  
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- Measurement of the  $\bar{B}_s^0$  meson lifetime in  $D_s^+ \pi^-$  decays  
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- Measurement of  $CP$  violation in  $B_s^0 \rightarrow \phi \phi$  decays  
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- Measurement of the ratio of  $B_c^+$  branching fractions to  $J/\psi \pi^+$  and  $J/\psi \mu^+ \nu_\mu$   
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- Observation of Z production in proton-lead collisions at LHCb  
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- Search for CP violation in  $D^\pm \rightarrow K_S^0 K^\pm$  and  $D_s^\pm \rightarrow K_S^0 \pi^\pm$  decays  
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- Observation of the  $\Lambda_b^0 \rightarrow J/\psi p \pi^-$  decay  
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- Precision measurement of the mass and lifetime of the  $\Xi_b^0$  baryon  
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- Study of the kinematic dependences of  $\Lambda_b^0$  production in pp collisions and a measurement of the  $\Lambda_b^0 \rightarrow \Lambda_c^+ \pi^-$  branching fraction  
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- Study of Y production and cold nuclear matter effects in pPb collisions at  $\sqrt{s_{NN}}=5$  TeV  
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- Measurement of the CP-violating phase  $\phi_s$  in  $\bar{B}_s^0 \rightarrow J/\psi \pi^+ \pi^-$  decays  
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- Observation of the  $B_s^0 \rightarrow J/\psi K_S^0 K^\pm \pi^\mp$  decay  
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- Measurement of CP asymmetry in  $D^0 \rightarrow K^- K^+$  and  $D^0 \rightarrow \pi^- \pi^+$  decays  
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- Measurement of the  $\Xi_b^-$  and  $\Omega_b^-$  baryon lifetimes  
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- Measurement of the resonant and CP components in  $\bar{B}^0 \rightarrow J/\psi \pi^+ \pi^-$  decays  
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- Observation of the resonant character of the  $Z(4430)^-$  state  
LHCb-Collaboration, R. Aaij *et al.*, Phys. Rev. Lett. **112** (2014) 22, 222002.
- Evidence for the decay  $B_c^+ \rightarrow J/\psi 3\pi^+ 2\pi^-$   
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- Evidence for the decay  $X(3872) \rightarrow \psi(2S)\gamma$   
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- Angular analysis of charged and neutral  $B \rightarrow K \mu^+ \mu^-$  decays  
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- Differential branching fractions and isospin asymmetries of  $B \rightarrow K^{(*)} \mu^+ \mu^-$  decays  
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- Study of beauty hadron decays into pairs of charm hadrons  
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- Measurement of polarization amplitudes and CP asymmetries in  $B^0 \rightarrow \phi K^*(892)^0$   
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- Measurement of  $\psi(2S)$  polarisation in pp collisions at  $\sqrt{s} = 7$  TeV  
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- Measurement of resonant and  $CP$  components in  $\bar{B}_s^0 \rightarrow J/\psi\pi^+\pi^-$  decays  
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- Precision measurement of the ratio of the  $\Lambda_b^0$  to  $\bar{B}^0$  lifetimes  
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- A study of  $CP$  violation in  $B^\pm \rightarrow DK^\pm$  and  $B^\pm \rightarrow D\pi^\pm$  decays with  $D \rightarrow K_S^0 K^\pm \pi^\mp$  final states  
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- Measurements of the  $B^+, B^0, B_s^0$  meson and  $\Lambda_b^0$  baryon lifetimes  
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- Measurement of  $Y$  production in  $pp$  collisions at  $\sqrt{s} = 2.76$  TeV  
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- Searches for  $\Lambda_b^0$  and  $\Xi_b^0$  decays to  $K_S^0 p \pi^-$  and  $K_S^0 p K^-$  final states with first observation of the  $\Lambda_b^0 \rightarrow K_S^0 p \pi^-$  decay  
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- Measurement of the  $B_c^+$  meson lifetime using  $B_c^+ \rightarrow J/\psi \mu^+ \nu_\mu X$  decays  
LHCb-Collaboration, R. Aaij *et al.*, Eur. Phys. J. C **74** (2014) 5, 2839.

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- Observation of associated production of a  $Z$  boson with a  $D$  meson in the forward region  
LHCb-Collaboration, R. Aaij *et al.*, JHEP **1404** (2014) 091.
- Observation of  $B_s^0 \rightarrow J/\psi f_1(1285)$  decays and measurement of the  $f_1(1285)$  mixing angle  
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## LHCb articles in press

- First observation and measurement of the branching fraction for the decay  $B_s^0 \rightarrow D_s^{*\mp} K^\pm$   
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- Observation of the  $B^0 \rightarrow \rho^0 \rho^0$  decay from an amplitude analysis of  $B^0 \rightarrow (\pi^+ \pi^-)(\pi^+ \pi^-)$  decays  
LHCb-Collaboration, R. Aaij *et al.*, arXiv:1503.07770 [hep-ex].
- Observation of the  $B_s^0 \rightarrow \eta' \eta'$  decay  
LHCb-Collaboration, R. Aaij *et al.*, arXiv:1503.07483 [hep-ex].
- Differential branching fraction and angular analysis of  $\Lambda_b^0 \rightarrow \Lambda^0 \mu^+ \mu^-$  decays  
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- Observation of the decay  $\bar{B}_s^0 \rightarrow \psi(2S) K^+ \pi^-$   
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- Measurement of  $CP$  violation in  $B^0 \rightarrow J/\psi K_S^0$  decays  
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- Measurement of the time-dependent  $CP$  asymmetries in  $B_s^0 \rightarrow J/\psi K_S^0$ ,  
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- Measurement of  $CP$  asymmetries and polarisation fractions in  $B_s^0 \rightarrow K^{*0} \bar{K}^{*0}$  decays  
LHCb-Collaboration, R. Aaij *et al.*, arXiv:1503.05362 [hep-ex].
- First observation and amplitude analysis of the  $B^- \rightarrow D^+ K^- \pi^-$  decay  
LHCb-Collaboration, R. Aaij *et al.*, arXiv:1503.02995 [hep-ex].

- Measurement of forward  $Z \rightarrow e^+e^-$  production at  $\sqrt{s} = 8$  TeV  
LHCb-Collaboration, R. Aaij *et al.*, arXiv:1503.00963 [hep-ex].
- Precise measurements of the properties of the  $B_1(5721)^{0,+}$  and  $B_2^*(5747)^{0,+}$  states and observation of  $B^{+,0}\pi^{-,+}$  mass structures  
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- Measurement of indirect  $CP$  asymmetries in  $D^0 \rightarrow K^-K^+$  and  $D^0 \rightarrow \pi^-\pi^+$  decays  
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- Determination of the branching fractions of  $B_s^0 \rightarrow D_s^\mp K^\pm$  and  $B^0 \rightarrow D_s^- K^+$   
LHCb-Collaboration, R. Aaij *et al.*, arXiv:1412.7654 [hep-ex].
- Search for long-lived particles decaying to jet pairs  
LHCb-Collaboration, R. Aaij *et al.*, arXiv:1412.3021 [hep-ex].
- Observation of the rare  $B_s^0 \rightarrow \mu^+\mu^-$  decay from the combined analysis of CMS and LHCb data  
LHCb-Collaboration, R. Aaij *et al.*, arXiv:1411.4413 [hep-ex].
- Measurement of the  $\eta_c(1S)$  production cross-section in proton-proton collisions via the decay  $\eta_c(1S) \rightarrow p\bar{p}$   
LHCb-Collaboration, R. Aaij *et al.*, arXiv:1409.3612 [hep-ex].

#### Conference contributions

- Katharina Müller: LHCb results in proton-nucleus collisions at the LHC  
Kruger 2014: The International Workshop on Discovery Physics at the LHC, 1 - 5 Dec 2014, Skukuza, South Africa
- Katharina Müller: Central exclusive quarkonia production in the forward region at LHCb  
Kruger 2014: The International Workshop on Discovery Physics at the LHC, 1 - 5 Dec 2014, Skukuza, South Africa
- Christian Elsasser: Proton-Ion Physics with LHCb - Results and Prospects  
The 2nd International Conference on the Initial Stages in High-Energy Nuclear Collisions, 3 - 7 Dec 2014, Napa, California, U.S.A.
- Albert Bursche: Associated Boson Production in the forward acceptance  
6th International Workshop on Multiple Partonic Interactions at the LHC, 3 - 17 Nov 2014, Krakow, Poland
- Marcin Chrzęszcz: Lepton flavour violation in tau decays at LHCb  
The 13th International Workshop on Tau Lepton Physics, 15-19 Sep, 2014, Aachen, Germany
- Espen Bowen: Vertexing and tracking software at LHCb  
VERTEX2014, 15-19 Sep 2014, Macha Lake, The Czech Republic
- Federica Lionetto: LHCb upgrade : Upstream Tracker  
VERTEX2014, 15-19 Sep 2014, Macha Lake, The Czech Republic
- Christian Elsasser: LHCb Silicon Detectors: Operational Experience and Run I  $\rightarrow$  Run II Transition  
VERTEX2014, 15-19 Sep 2014, Macha Lake, The Czech Republic
- Marcin Chrzęszcz: Lepton flavour and number violation measurements at LHCb  
XIIth International Conference on Heavy Quarks and Leptons 2014, 25 - 29 Aug 2014, Mainz, Germany
- Marcin Chrzęszcz: Rare B and charm decays at LHCb  
XIIth International Conference on Heavy Quarks and Leptons 2014, 25 - 29 Aug 2014, Mainz, Germany
- Katharina Müller: Measurements with electroweak bosons at LHCb  
20th Particles and Nuclei International Conference, 24 - 29 Aug 2014, Hamburg, Germany

- Katharina Müller: LHCb results in proton-nucleus collisions at the LHC  
20th Particles and Nuclei International Conference, 24 - 29 Aug 2014, Hamburg, Germany
- Katharina Müller: Electroweak and central exclusive measurements in the forward region at LHCb  
Seminar, 8 Jul 2014, Heidelberg, Germany
- Olaf Steinkamp: The LHCb Upgrades  
Rencontres du Vietnam 2014: Physics at LHC and beyond, 10 - 17 Aug 2014, Quy Nhon, Vietnam
- Marco Tresch: Electroweak penguin decays to leptons at LHCb  
10th Rencontres du Vietnam - Flavour Physics Conference, 27 Jul - 2 Aug 2014, Quy Nhon, Vietnam
- Albert Bursche: QCD and forward physics at LHCb  
Low x workshop, 17 - 21 Jun 2014, Kyoto, Japan
- Federica Lionetto: Associated vector boson production in the forward region  
Hadron Structure and QCD 2014, 30 Jun - 4 Jul 2014, Gatchina, Russia
- Christian Elsasser: Performance of the LHCb Silicon Tracker during LHC Run I  
SPS 2014, 30 Jun - 2 Jul 2014, Fribourg, Switzerland
- Christian Elsasser: Heavy Ion Physics at LHCb  
Large Hadron Collider Physics (LHCP) Conference, 2 - 7 Jun 2014, New York, USA
- Katharina Müller: QCD and electroweak measurements in the forward region at LHCb  
26th Rencontres de Blois on Particle Physics and Cosmology, 18 - 23 May 2014, Blois, France
- Marcin Chrzęszcz: Searches for New Physics with LHCb  
26th Rencontres de Blois on Particle Physics and Cosmology, 18 - 23 May 2014, Blois, France

#### PhD theses

- The Rare Decays  $B_{(s)}^0 \rightarrow \mu^+ \mu^-$  and Z Boson Production at LHCb and Radiation Damage in its Silicon Tracker  
Christian Elsasser, PhD Thesis, Universität Zürich, 2014
- Low-Mass Drell-Yan Cross-Section Measurements  
Nicola Chiapolini, PhD Thesis, Universität Zürich, 2014
- Z Bosons in LHCb  
Albert Bursche, PhD Thesis, Universität Zürich, 2014
- Search for Charged Lepton Flavour Violation at LHCb experiment  
M. Chrzęszcz, PhD Thesis, Henryk Niewodniczanski Institute of Nuclear Physics, Kraków, 2014
- Advances in Solar Radiometry  
Markus Suter, PhD Thesis, Universität Zürich, 2014

### 19.1.9 CMS

#### Articles

- Search for physics beyond the standard model in events with two leptons, jets, and missing transverse momentum in pp collisions at  $\sqrt{s} = 8$  TeV  
V. Khachatryan *et al.* [CMS Collaboration], JHEP **1504** (2015) 124.
- Measurement of the Z production cross section in pp collisions at 8 TeV and search for anomalous triple gauge boson couplings  
V. Khachatryan *et al.* [CMS Collaboration], JHEP **1504** (2015) 164.

- Search for supersymmetry using razor variables in events with  $b$ -tagged jets in  $pp$  collisions at  $\sqrt{s} = 8$  TeV  
V. Khachatryan *et al.* [CMS Collaboration], Phys. Rev. D **91** (2015) 052018.
- Search for decays of stopped long-lived particles produced in proton-proton collisions at  $\sqrt{s} = 8$  TeV  
V. Khachatryan *et al.* [CMS Collaboration], Eur. Phys. J. C **75** (2015) 4, 151.
- Search for resonances and quantum black holes using dijet mass spectra in proton-proton collisions at  $\sqrt{s} = 8$  TeV  
V. Khachatryan *et al.* [CMS Collaboration], Phys. Rev. D **91** (2015) 5, 052009.
- Search for physics beyond the standard model in dilepton mass spectra in proton-proton collisions at  $\sqrt{s} = 8$  TeV  
V. Khachatryan *et al.* [CMS Collaboration], JHEP **1504** (2015) 025.
- Searches for supersymmetry based on events with  $b$  jets and four  $W$  bosons in  $pp$  collisions at 8 TeV  
V. Khachatryan *et al.* [CMS Collaboration], Phys. Lett. B **745** (2015) 5.
- Measurement of the inclusive 3-jet production differential cross section in proton-proton collisions at 7 TeV and determination of the strong coupling constant in the TeV range  
V. Khachatryan *et al.* [CMS Collaboration], Eur. Phys. J. C **75** (2015) 5, 186.
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## Lectures and oral presentations

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- Y. Yang: Search for dark matter in CMS  
Workshop on Effective Theories and Dark Matter, March 16-27, 2015 - Heidelberg, Germany.
- D. Pinna: Dark Matter produced in association with top quark pair  
Moriond Electroweak Interactions and Unified Theories, March 14-21, 2015 - La Thuile, Italy.
- F. Canelli: The top quark at 20  
AEC Seminars on Particle Physics, February 25, 2015 - University of Bern, Switzerland.
- V. Chiochia: New heavy flavour results from CMS  
Kruger 2014: The International Workshop on Discovery Physics at the LHC, December 1-5, 2014 - Kruger Parc, South Africa.
- J. Ngadiuba: Overview of di-bosons searches  
CMS Exotica Workshop, November 12-14, 2014 - Madrid, Spain.
- F. Canelli: Beyond the standard model with top quarks  
LBNL Research Progress Meeting, October 28, 2014 - Berkeley, California, US.
- A. De Cosa: DarkMatter B2G analyses: Preparation for Run2  
CMS B2G Workshop, October 23-24, 2014 - Fermilab, Batavia, US.
- Y. Yang: Search for dark matter at the LHC  
Seminar on particle and astrophysics, October 22, 2014 - University of Zurich, Switzerland.
- L. Caminada: Determination of the strange content of the proton using LHC data  
Seminar on particle and astrophysics, October 8, 2014 - University of Zurich, Switzerland.
- F. Canelli: Searches with top quarks beyond the standard model  
TOP 2014, September 29 - October 3, 2014 - Cannes, France.
- C. Lange: Beyond Standard Model Higgs  
XXXIV Physics in Collision Symposium Bloomington, September 16-20, 2014 - Bloomington, Indiana, US.
- A. De Cosa: CMS pixel detector: Operational Experience and Run1 to Run2 transition  
VERTEX2014, 15-19 Sep 2014, Macha Lake, The Czech Republic

- B. Kilminster: The shape of the Higgs Boson  
Prospects and Precision of Higgs physics with 13 TeV at the LHC, September 14, 2014 - Firenze, Italy.
  - C. Galloni: Search for new bosons decaying to boosted tau and b pairs at CMS  
PhD Seminar, September 11, 2014 - University of Zurich, Switzerland.
  - J. Ngadiuba: Search for new heavy bosons with boosted b-tagged jets in the final state with CMS  
PhD Seminar, September 11, 2014 - University of Zurich, Switzerland.
  - D. Pinna: Search for Dark Matter associated top pair production in single-lepton channel with the CMS detector  
PhD Seminar, September 11, 2014 - University of Zurich, Switzerland.
  - D. Salerno: Search for associated ttH production in the Hbb decay channel at CMS using the Matrix Element Method  
PhD Seminar, September 11, 2014 - University of Zurich, Switzerland.
  - D. Pinna: CMS Search for Dark Matter produced in association with top quarks  
DM@LHC conference, September 25-27, 2014 - Oxford, UK.
  - A. Hinzmann: Jet substructure measurements in ATLAS+CMS  
BOOST 2014, August 18-22, 2014 - London, UK.
  - A. Hinzmann: Searches for exotic new physics in CMS  
ICNFP 2014, July 28 - August 6, 2014 - Kolymbari, Greek.
  - M. Verzetti: Higgs boson decay channels with fermions  
Higgs Hunting 2014 conference, July 21-23, 2014 - Orsay, France.
  - C. Galloni: Search for heavy resonances decaying into a pair of Higgs Bosons in the tau+ tau- b bbar final state at CMS  
SPS Annual Meeting, July 1-2, 2014 - Fribourg, Switzerland.
  - D. Salerno: Search for associated t tbar H production in the H to bbar channel at CMS using the Matrix Element Method  
SPS Annual Meeting, July 1-2, 2014 - Fribourg, Switzerland.
  - D. Pinna: Search for Dark Matter associated top pair production in single-lepton channel with the CMS detector  
2014 EUROPEAN SCHOOL OF HIGH - ENERGY PHYSICS, 18 June - 1 July, 2014 - Garderen, Netherlands.
  - Y. Yang: Search for dark matter in CMS  
20th International Symposium on Particles, Strings and Cosmology, 22-27 June, 2014 - Warsaw, Poland.
- PhD thesis
- Search for the Standard Model Higgs in Tau Decays in Association with a W Boson  
M. Verzetti, PhD Thesis, Universität Zürich, CMS TS-2015/003.

## 19.2 Condensed matter

### 19.2.1 Superconductivity and Magnetism

#### Articles

- Pressure Effects in the Iron Chalcogenides  
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A. Krzton-Maziopa, Z. Guguchia, E. Pomjakushina, V. Pomjakushin, R. Khasanov, H. Luetkens, P.K. Biswas, A. Amato, H. Keller, and K. Conder, *J. Phys.: Condens. Matter* **26**, 215702 (2014).
- The Unique Properties of Superconductivity in Cuprates  
K.A. Müller, *J. Supercond. Nov. Magn.* **27**, 2163 (2014).
- Local disorder investigation in  $\text{NiS}_{2-x}\text{Se}_x$  using Raman and Ni K-edge x-ray absorption Spectroscopies  
C. Marini, B. Joseph, S. Caramazza, F. Capitani, M. Bendele, M. Mitrano, D. Chermisi, S. Mangialardo, B. Pal, M. Goyal, A. Iadecola, O. Mathon, S. Pascarelli, D.D. Sarma, and P. Postorino, *J. Phys.: Condens. Matter* **26**, 452201 (2014).
- Controlling the near-surface superfluid density in underdoped  $\text{YBa}_2\text{Cu}_3\text{O}_{6+x}$  by photo-illumination  
E. Stilp, A. Suter, T. Prokscha, Z. Salman, E. Morenzoni, H. Keller, P. Pahlke, R. Huehne, C. Bernhard, L. Ruixing, W.N. Hardy, D.A. Bonn, J.C. Baglo, and R.F. Kiefl, *Scientific Reports* **4**, 6250 (2014).
- Probing the multi gap behavior within '11' and '122' families of iron based superconductors: the  $\mu\text{SR}$  studies  
R. Khasanov and Z. Guguchia, *Superconductor Science and Technology* **28**, 034003 (2015).
- Over Half a Century of Research in Oxides  
K.A. Müller, *J. Supercond. Nov. Magn.* **28**, 739 (2015).
- The intrinsic heterogeneity of superconductivity in the cuprates  
A. Shengelaya and K.A. Müller, *EPL* **109**, 27001 (2015).

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## PhD theses

- Photo-Induced Effects in Cuprate Systems  
Evelyn Stilp, PhD Thesis, Physik-Institut, Universität Zürich, 2014.
- Structural and Magnetic Properties of the Insulating  $T^{\prime}\text{-RE}_2\text{CuO}_4$  Parent Compounds of Electron-Doped Superconductors  
Gwendolyne Banasan Pascua, Physik-Institut, Universität Zürich, 2014.

## Conference reports

- Oxygen isotope effects on the superconducting and magnetic states in the static stripe phase of  $\text{La}_{2-x}\text{Ba}_x\text{CuO}_4$  ( $x = 1/8$ )  
Z. Guguchia, R. Khasanov, M. Bendele, E. Pomjakushina, K. Conder, A. Shengelaya, and H. Keller,  $\mu\text{SR}2014$ , Grindelwald, Switzerland, June 1-6, 2014.
- Modifications of the Meissner screening profile due to illumination with visible light of underdoped  $\text{YBa}_2\text{Cu}_3\text{O}_{7-\delta}$   
E. Stilp, A. Suter, T. Prokscha, Z. Salman, E. Morenzoni, H. Keller, P. Pahlke, R. Huehne, C. Bernhard, L. Ruixing, W.N. Hardy, D.A. Bonn, J.C. Baglo, and R.F. Kiefl,  $\mu\text{SR}2014$ , Grindelwald, Switzerland, June 1-6, 2014.
- Influence of gold nanoparticles on the Meissner screening profile of  $\text{YBa}_2\text{Cu}_3\text{O}_{7-\delta}$  thin films  
E. Stilp, A. Suter, T. Prokscha, Z. Salman, E. Morenzoni, H. Keller, C. Katzer, F. Schmidl, and M. Döbeli,  $\mu\text{SR}2014$ , Grindelwald, Switzerland, June 1-6, 2014.
- Controlling the near-surface superfluid density in underdoped  $\text{YBa}_2\text{Cu}_3\text{O}_{6+x}$  by photo-illumination  
E. Stilp, A. Suter, T. Prokscha, Z. Salman, E. Morenzoni, H. Keller, P. Pahlke, R. Huehne, C. Bernhard, L. Ruixing, W.N. Hardy, D.A. Bonn, J.C. Baglo, and R.F. Kiefl, Annual Meeting of the Swiss Physical Society, Fribourg, Switzerland, June 30 - July 2, 2014.
- Tuning the static spin stripe phase and superconductivity in  $\text{La}_{2-x}\text{Ba}_x\text{CuO}_4$  ( $x = 1/8$ ) by hydrostatic pressure  
Z. Guguchia, A. Maisuradze, G. Ghambashidze, R. Khasanov, A. Shengelaya, and H. Keller, *Condensed Matter in Paris*, Paris, France, August 24-29, 2014.

## Invited lectures

- H. Keller: Pressure effects in unconventional superconductors studied by muon spin rotation  
4th Intl. Conf. on Superconductivity and Magnetism (ICSM 2014), Antalya, Turkey, April 27 - May 2, 2014.
- H. Keller: Tuning the structural and magnetic phase transitions of  $\text{EuTiO}_3$  by Sr doping  
4th Intl. Conf. on Superconductivity and Magnetism (ICSM 2014), Antalya, Turkey, April 27 - May 2, 2014.
- H. Keller: 30 years of  $\mu\text{SR}$  - looking back to the future  
 $\mu\text{SR}2014$ , Grindelwald, Switzerland, June 1-6, 2014.
- H. Keller: Pressure effects in unconventional superconductors studied by muon spin rotation  
Intl. Conf. on Magnetic Resonance: Fundamental Research and Pioneering Applications (MR70), Kazan, Russia, June 23 -27, 2014.
- Z. Guguchia: Negative oxygen isotope effect on the static spin-stripe order in  $\text{La}_{2-x}\text{Ba}_x\text{CuO}_4$  ( $x = 1/8$ )  
6th Georgian-German School and Workshop in Basic Science, Tbilisi, Georgia, July 7-12, 2014.
- Z. Guguchia: Muon spin rotation studies of spin fluctuations in the paramagnetic phase of  $\text{EuTiO}_3$   
Condensed Matter in Paris, Paris, August 24-29, 2014.
- Z. Guguchia: Hydrostatic pressure and oxygen isotope effects on the static spin-stripe order and superconductivity in  $\text{La}_{2-x}\text{Ba}_x\text{CuO}_4$  ( $x = 1/8$ )  
Max Planck Institute for Solid State Research, Stuttgart, Germany, February 25-26, 2015.

## 19.2.2 Phase transitions and superconducting photon detectors

### Articles

- Superconductivity in rubidium-substituted  $\text{Ba}_{1-x}\text{Rb}_x\text{Ti}_2\text{Sb}_2\text{O}$   
F. von Rohr, R. Nesper, and A. Schilling, *Phys. Rev. B* **89** (2014) 094505.
- Low-temperature magnetic fluctuations in the Kondo insulator  $\text{SmB}_6$   
P.K. Biswas, Z. Salman, T. Neupert, E. Morenzoni, E. Pomjakushina, F. von Rohr, K. Conder, G. Balakrishnan, M. Ciomaga-Hatnean, M.R. Lees, D. McK. Paul, A. Schilling, C. Baines, H. Luetkens, R. Khasanov, and A. Amato, *Phys. Rev. B* **89** (2014) 161107(R).
- Superconductivity and correlated Fermi liquid behavior in noncentrosymmetric  $\text{Ca}_3\text{Ir}_4\text{Ge}_4$   
F. von Rohr, H. Luo, N. Ni, M. Wörle, and R.J. Cava, *Phys. Rev. B* **89** (2014) 224504.
- Influence of disorder on the structural phase transition and magnetic interactions in  $\text{Ba}_{3-x}\text{Sr}_x\text{Cr}_2\text{O}_8$   
H. Grundmann, A. Schilling, M. Medarde, D. Sheptyakov, *Phys. Rev. B* **90** (2014) 075101.
- Monodisperse colloidal gallium nanoparticles: Synthesis, low temperature crystallization and surface plasmon resonance  
M. Yarema, M. Wörle, M.D. Rossell, R. Erni, R. Caputo, L. Protesescu, D.N. Dirin, K. Lienau, F. von Rohr, A. Schilling, M. Nachtegaal, and M. V. Kovalenko, *J. Am. Chem. Soc.* **136** (2014) 12422.
- Effect of pressure driven local structural rearrangement on the superconducting properties of  $\text{FeSe}_{0.5}\text{Te}_{0.5}$   
M. Bendele, Z. Guguchia, F. von Rohr, T. Irifune, T. Shinmei, I. Kantor, S. Pascarelli, B. Joseph, and C. Marini, *Phys. Rev. B* **90** (2014) 174505.

### PhD-Theses

- Superconductivity in the Vicinity of Structural and Electronic Phase Boundaries  
Fabian von Rohr, PhD Thesis, Physik-Institut, Universität Zürich, 2014.
- Tuning the Bose-Einstein Condensation in Spin Dimer Quantum Magnets  
Henrik Grundmann, PhD Thesis, Physik-Institut, Universität Zürich, 2014.



## Contributed Conference Presentations

- H. Grundmann: Structure and magnetic interactions in  $\text{Ba}_{3-x}\text{Sr}_x\text{Cr}_2\text{O}_8$   
European Conference Physics of Magnetism, Poznań (Poland), 25.06.2014.
- H. Grundmann: Structure and magnetic interactions in  $\text{Ba}_{3-x}\text{Sr}_x\text{Cr}_2\text{O}_8$  (Poster)  
Swiss Physical Society Annual Meeting, Fribourg (Switzerland), 30.6.2014.
- X. Zhang: Superconducting and normal state properties of a-WSi films (Poster)  
Swiss Physical Society Annual Meeting, Fribourg (Switzerland), 30.6.2014.
- F. von Rohr: Superconductivity and charge-density-wave ordering in  $\text{BaTi}_2\text{Sb}_2\text{O}$  (Poster)  
Gordon Research Conference in Solid State Chemistry, New London (NH, USA) 1.8.2014.
- A. Gazizulina: Structure and magnetic interactions in  $\text{Ba}_{3-x}\text{Sr}_x\text{Cr}_2\text{O}_8$   
DPG Spring Meeting 2015, Berlin (Germany), 16.03.2016.
- F. von Rohr: How to find new noncentrosymmetric superconductors by the example of  $\text{Ca}_3\text{Ir}_4\text{Ge}_4$  (Poster)  
Chemistry meets Physics Meeting, Ringberg (Germany), 18.3.2015.

## Invited Lectures

- F. von Rohr: How to find new superconductors  
Solid State Chemistry Seminar, Ludwig-Maximilians-Universität München (Germany), 29.4.2014.
- F. von Rohr: New Materials for superconductors and topological insulators  
Solid State Physics Seminar, Max Planck Institut für Festkörperforschung in Stuttgart (Germany), 1.7.2014.
- A. Engel: Simple numerical model gives deep insights into the detection mechanism in SNSPD  
Applied Superconductivity Conference, Charlotte (NC, USA), 13.8.2014.
- F. von Rohr: Superconductivity in the vicinity of structural and electronic phase boundaries  
Materials Theory Seminar, ETH Zürich (Switzerland), 31.10.2014.
- A. Engel: X-ray sensitive superconducting nanowire single-photon detectors: development and perspectives  
Joint Instrumentation Seminar at DESY, Hamburg University and XFEL, Hamburg (Germany), 28.11.2014.
- H. Grundmann: Tuning the Bose-Einstein Condensation of Triplons  
Helmholtz-Zentrum für Materialien und Energie, Berlin (Germany), 20.3.2015.

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## 19.2.3 Surface Physics

## Articles

- Surface Aligned Magnetic Moments and Hysteresis of an Endohedral Single-Molecule Magnet on a Metal  
R. Westerström, A.-C. Uldry, R. Stania, F. Dreiser, C. Piamonteze, M. Muntwiler, F. Matsui, S. Rusponi, H. Brune, S. Yang, A. Popov, B. Büchner, B. Delley, and T. Greber, *Phys. Rev. Lett.* 114, 087201 (2015).
- Response of the topological surface state to surface disorder in  $\text{TlBiSe}_2$   
F. Pielmeier, G. Landolt, B. Slomski, S. Muff, J. Berwanger, A. Eich, A. A. Khajetoorians, J. Wiebe, Z. S. Aliev, M. B. Babanly, R. Wiesendanger, J. Osterwalder, E. V. Chulkov, F. J. Giessibl, and J. H. Dil, *New J. Phys.* 17, 023067 (2015).
- Direct measurement of the bulk spin structure of noncentrosymmetric  $\text{BiTeCl}$   
G. Landolt, S. V. Ereemeev, O. E. Tereshchenko, S. Muff, K. A. Kokh, J. Osterwalder, E. V. Chulkov, and J. H. Dil, *Phys. Rev. B* 91, 081201(R) (2015).
- Ar implantation beneath graphene on  $\text{Ru}(0001)$ : Nanotents and "can-opener" effect  
H. Cun, M. Iannuzzi, A. Hemmi, J. Osterwalder, and T. Greber, *Surf. Sci.* 634, 95 (2015).

- Rashba-type spin splitting and spin interference of the Cu(111) surface state at room temperature  
J. H. Dil, F. Meier, and J. Osterwalder, *J. Electr. Spec. and Rel. Phen.* (2015).
- The Metallofullerene Field-Induced Single-Ion Magnet HoSc<sub>2</sub>N@C<sub>80</sub>  
J. Dreiser, R. Westerström, Y. Zhang, A. A. Popov, L. Dunsch, K. Krämer, S.-X. Liu, S. Decurtins, and T. Greber, *Chem. Eur. J.* 20, 13536 (2014).
- Acquisition of photoelectron diffraction patterns with a two-dimensional wide-angle electron analyzer  
M. Greif, L. Castiglioni, D. Becker-Koch, J. Osterwalder, and M. Hengsberger, *J. Electr. Spec. and Rel. Phen.* 197, 30 (2014).
- X-ray induced demagnetization of single-molecule magnets  
J. Dreiser, R. Westerström, C. Piamonteze, F. Nolting, S. Rusponi, H. Brune, S. Yang, A. Popov, L. Dunsch, and T. Greber, *Appl. Phys. Lett.* 105, 032411 (2014).
- Cluster-size dependent internal dynamics and magnetic anisotropy of Ho ions in HoM<sub>2</sub>N@C<sub>80</sub> and Ho<sub>2</sub>MN@C<sub>80</sub> families (M = Sc, Lu, Y)  
Y. Zhang, D. Krylov, S. Schiemenz, M. Rosenkranz, R. Westerström, J. Dreiser, T. Greber, B. Büchner, and A. Popov, *Nanoscale*, 6, 11431 (2014).
- Two-Nanometer Voids in Single-Layer Hexagonal Boron Nitride: Formation via the "Can-Opener" Effect and Annihilation by Self-Healing  
H. Cun, M. Iannuzzi, A. Hemmi, J. Osterwalder, and T. Greber, *ACS Nano*, 8, 7423 (2014).

#### PhD theses

- Electronic Properties of Atomically Precise Graphene Nanoribbons  
Hajo Söde, PhD Thesis, EMPA and Physik-Institut, Universität Zürich, 2015.
- Time-resolved Photoelectron Diffraction  
Michael Greif, PhD Thesis, Physik-Institut, Universität Zürich, 2015.
- Large Scale Single Layer Hexagonal Boron Nitride Growth, Process Control and Application  
Adrian Hemmi, PhD Thesis, Physik-Institut, Universität Zürich, 2014.
- Spin- and Angle-Resolved Photoelectron Spectroscopy on Topological Insulators and Bulk Rashba Systems  
Gabriel Landolt, PhD Thesis, Physik-Institut, Universität Zürich, 2014.

#### Contributed conference presentations

- Time-resolved photoelectron diffraction from solids  
M. Hengsberger, Workshop on ultrafast dynamical imaging of Matter (UDIM), Grindelwald, 11.3.15.
- Magnets inside C<sub>80</sub>  
T. Greber, 30<sup>th</sup> Workshop on High T<sub>c</sub>, Obertraun, Austria, 13.2.15.
- Ion implantation beneath a corrugated monolayer of boron nitride: Nanotents, "can-opener" effect and self-healing  
H. Cun, SAOG meeting 2015, Fribourg, 23.1.15.
- Ion implantation beneath a corrugated monolayer of boron nitride: Nanotents, "can-opener" effect and self-healing  
H. Cun, International Symposium on Surface Science (ISSS 7), Matsue, Japan, 3.11.14.
- Adsorption study of porphyrin molecules on a Au(111) surface  
G. Mette, Summerschool, Les Diablerets, 10.9.14.
- Photoelectron Diffraction in the x-ray and ultraviolet regime: Towards real-time measurements of structural dynamics  
M. Greif, European Conference on Surface Science (ECOSS 30), Antalya, Turkey, 2.9.14.
- Origin of attosecond delays in photoemission from noble metal surfaces  
L. Castiglioni, European Conference on Surface Science (ECOSS 30), Antalya, Turkey, 2.9.14.

- Attosecond dynamics of photoelectric effect in surfaces  
M. Hengsberger, European Conference on Surface Science (ECOSS 30), Antalya, Turkey, 1.9.14.
- Adsorption study of a new polypyridine macrocycle on Au(111)  
G. Mette, European Conference on Surface Science (ECOSS 30), Antalya, Turkey, 1.9.14.
- Attosecond interferometry for the determination of photoemission delays and ultrafast electron dynamics in solids  
L. Castiglioni, International Workshop on Photoionization and Resonant Inelastic X-Ray Scattering, Erice, Italy, 27.8.14
- CVD growth and transfer of single-crystalline hexagonal boron nitride monolayers and graphene  
J. Osterwalder, Swiss Nanoconvention, Brugg, 21.5.14.
- Ion Implantation beneath a corrugated Single Layer of Boron Nitride: Nanotent Formation and "can-opener" effect  
H. Cun, MRS spring meeting, San Francisco, USA, 22.4.14.
- Lateral Segregation in Pt<sub>50</sub>Rh<sub>50</sub>(111) induced by a *h*-BN nanomesh  
R. Stania, DPG Frühjahrstagung, Dresden, Germany, 2.4.14.

## Invited lectures

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- H. Cun: Nanotents - and controlled 2 nm hole formation in monolayers of hexagonal boron nitride and graphene  
Seminar Institute of Electronic Materials Technology (ITME), Warsaw, Poland, 17.2.15
- T. Greber: Spinshuttles  
Symposium on Surface and Nanoscience (SSNS'15), Furano, Japan, 15.1.15
- J. Osterwalder: Zweidimensionale Festkörper: Graphen und hexagonales Bornitrid  
Physikalische Gesellschaft Zürich, 27.11.14
- T. Greber: Cutting and Assembling 2 Nanometer Voids in Single Layer hexagonal Boron Nitride  
American Vacuum Society (AVS) 61<sup>st</sup> International Symposium and Exhibition, Baltimore, MD, USA, 10.11.14
- J. Osterwalder: Graphene on hexagonal boron nitride heterostacks grown by UHV-CVD on metal surfaces  
American Vacuum Society (AVS) 61<sup>st</sup> International Symposium and Exhibition, Baltimore, MD, USA, 10.11.14
- T. Greber: Looking inside spin-shuttles  
SPinMol 2014, Monte Verita, Switzerland, 28.10.14
- T. Greber: Self-assembly of 2 nanometer voids in hexagonal boron nitride on rhodium: Creation and annihilation  
73<sup>th</sup> IUVESTA Workshop, Eisenerz, Austria, 26. 9.14
- H. Cun: Ion implantation beneath a corrugated monolayer of Boron Nitride: Nanotents, "can-opener" effect and self-healing  
Seminar EMPA, Dübendorf, Switzerland, 29.8.14
- T. Greber: Steering stiction of a liquid on a surface  
International Workshop on Nanomaterials and Nanodevices, Wuhan, China, 4.7.14
- T. Greber: Nanotent and 2 nm void-formation in sp<sup>2</sup> hybridized single layers on metals  
International Workshop on Nanomaterials and Nanodevices, Beijing, China, 1.7.14
- T. Greber: From C<sub>60</sub> to Spin-Shuttle-Single-Molecule Magnets on Surfaces  
Seminar Peking University, Beijing, China, 30.6.14
- J. Osterwalder: Boron nitride and graphene on single crystal substrates: CVD growth of heterostructures and film transfer  
2<sup>nd</sup> European Workshop on Epitaxial Graphene (EWEG), Primosten, Croatia, 17.6.14
- J. Osterwalder: Functionalization from corrugated hexagonal boron nitride monolayers  
Seminar Donostia International Physics Center, San Sebastian, Spain, 16.4.14

## 19.2.4 Biological systems

### Articles

- Low-energy electron holographic imaging of gold nanorods supported by ultraclean graphene  
J.-N. Longchamp, C. Escher, T. Latychevskaia, and H.-W. Fink, *Ultramicroscopy* 145 (80-84) (2014).
- On artefact-free reconstruction of low-energy (30-250 eV) electron holograms  
T. Latychevskaia, J.-N. Longchamp, C. Escher, and H.-W. Fink, *Ultramicroscopy* 145 (22-27) (2014).
- Holographic time-resolved particle tracking by means of three-dimensional volumetric deconvolution  
T. Latychevskaia, and H.-W. Fink, *Opt. Express* 22 (17), pp. 20994-21003 (2014).
- Terahertz in-line digital holography of dragonfly hindwing: amplitude and phase reconstruction at enhanced resolution by extrapolation  
L. Rong, T. Latychevskaia, D. Wang, X. Zhou, H. Huang, Z. Li, and Y. Wang,  
*Opt. Express* 22 (14), pp. 17236-17245 (2014).
- Atomically resolved structural determination of graphene and its point defects by employing extrapolation assisted phase retrieval  
T. Latychevskaia, and H.-W. Fink, *Applied Physics Letters* 106, pp. 021908 (2015).
- Terahertz in-line digital holography of human hepatocellular carcinoma tissue  
L. Rong, T. Latychevskaia, D. Wang, Z. Yu, X. Zhou, C. Chen, H. Huang, Y. Wang, Z. Li, and Z. Zhou,  
*Scientific Reports* 5, 8445 (2015).
- Practical algorithms for simulation and reconstruction of digital in-line holograms  
T. Latychevskaia, and H.-W. Fink, Vol. 54, Issue 9, pp. 2424-2434 (2015).
- Reconstruction of purely absorbing, absorbing and phase-shifting, and strong phase-shifting objects from their single-shot in-line holograms  
T. Latychevskaia and H.-W Fink, *Applied Optics* 54, Issue 13, 3925-3932 (2015).

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### Article in press

- Holography and coherent diffraction with low-energy electrons: A route towards structural biology at the single molecule level  
T. Latychevskaia, J.-N. Longchamp, C. Escher, and H.-W. Fink, *Ultramicroscopy*.

### Contributed Conference Presentations

- M. Lorenzo, J. Verges and H.-W. Fink:  
LEEPS microscope and alkali metals adsorption dynamics on freestanding graphene (poster)  
Low-energy electrons: Lithography, Imaging, and Soft Matter (LEELIS), Amsterdam, Nov. 4 -5th, 2014.
- F. Wicki, J.-N. Longchamp and H.-W. Fink:  
Combining LEEPS microscopy and STM to study Atomically thin freestanding films (poster)  
Low-energy electrons: Lithography, Imaging, and Soft Matter (LEELIS), Amsterdam, Nov. 4 -5th, 2014.
- T. Latychevskaia and H.-W. Fink: Coherent imaging beyond detector area and Abbe limit, towards atomic resolution  
International Microscopy Congress, Prague (Czech Republic), Sept. 7 -12th, 2014.
- J.-N. Longchamp: Coherent Low-Energy Electron Microscopy of Single Biomolecules  
Seminar, June 10th 2014, Stuttgart (Germany)
- J.-N. Longchamp, C. Escher, H.-W. Fink:  
Ultraclean freestanding graphene as substrate for electrospray deposition of biomolecules  
Graphene Week, Gothenburg (Sweden), June 23-27th 2014.

- H.-W. Fink: Holographie und kohärente Beugung mit langsamen Elektronen: Perspektiven zur Strukturbestimmung eines individuellen Proteins  
Physik-Kolloquium, Erlangen, 23. June 2014.
- H.-W. Fink: Holography and Coherent Diffraction with Low Energy Electrons  
opening plenary talk, Atom Probe Tomography & Microscopy 2014, Stuttgart (Germany), 1. - 5. Sept. 2014.
- T. Latychevskaia and H.-W. Fink: Coherent imaging beyond detector area and Abbe limit, towards atomic resolution  
International Microscopy Congress, Prague (Czech Republic), September 7-12th, 2014.
- H.-W. Fink: Imaging with Coherent Electrons  
Quantum-Electron-Microscope Workshop, G. and B. Moore Foundation, Erlangen (Germany), 19./20. Sept. 2014.
- T. Latychevskaia, J.-N. Longchamp, C. Escher and H.-W. Fink: Coherent imaging with ultra-low energy electrons  
Sub-Angstrom Low-Voltage Electron Microscopy (SALVE) Symposium, Ulm (Germany), Febr. 2015.
- T. Latychevskaia: Phase retrieval methods applied to coherent imaging  
MECMATPLA, Montgenèvre (France), Febr. 2015.

### 19.2.5 Disordered and Biological Soft Matter

#### Articles

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- Studying foam dynamics in levitated, dry and wet foams using diffusing wave spectroscopy  
N. Isert, G. Maret, and C.M. Aegerter, *Colloids and Surfaces A*, **473**, 40 (2015).
- Probing Anderson localization using weak non-linear effects  
T. Sperling, W. Bührer, M. Ackermann, C.M. Aegerter, and G. Maret, *New Journal of Physics* **16**, 112001 (2014).
- Direct imaging of fluorescent structures behind turbid layers  
G. Ghielmetti, and C.M. Aegerter, *Optics Express* **22**, 1981 (2014).
- On growth and form of irregular coiled-shell of a terrestrial snail: *Plectostoma concinnum*  
T. Liew, A.C.M. Kok, M. Schilthuizen, and S. Urdy, *PeerJ* **2**, e383 (2014).
- A viscoelastic damage model for polycrystalline ice, inspired by Weibull-distributed fiber bundle models. Part I: Constitutive models  
A. Keller and K. Hutter, *Continuum Mechanics and Thermodynamics* **26**, 879 (2014).
- A viscoelastic damage model for polycrystalline ice, inspired by Weibull-distributed fiber bundle models. Part II: Thermodynamics of a rank-4 damage model  
A. Keller and K. Hutter, *Continuum Mechanics and Thermodynamics* **26**, 895 (2014).
- Conceptual thoughts on continuum damage mechanics for shallow ice shelves  
A. Keller and K. Hutter, *Journal of Glaciology* **60**, 685 (2014).
- Method and apparatus for imaging a structure marked with a fluorescent dye  
S. W. Hell, J. Schneider, J. Engelhardt, US Patent Application US2014/0097358 A1, April 2014.

#### PhD-Thesis

- Microscopy through turbid layers using wave-front shaping  
G. Ghielmetti, PhD Thesis, Universität Zürich, 2014

#### Conference reports

- Applying forces to wing discs  
F. Lanfranconi, Workshop "Forces in tissues", Paris, France (May 21 - 25 2014).

- Determination of the transmission matrix through thick turbid samples (poster)  
M. Ackermann, T. Sperling, G. Maret, and C.M. Aegerter, Workshop "Waves and Disorder", Cargese, France (June 30 - July 11, 2014).
- The Role of Mechanical Forces in the Regulation of Tissue Growth (poster)  
D. Eder, K. Basler and C.M. Aegerter, EMBL Advanced Course: Fluorescence Imaging Techniques, Heidelberg, Germany July 07-11 2014.
- Folding of growing epithelial tissues in a stochastic cell-based model (poster)  
S. Urdy , D. Laman-Trip , R. Merks, 2nd international conference on Systems Biology, Lausanne, Switzerland October 20-23 2014.
- Applying forces to wing discs  
F. Lanfranconi, SystemsX retreat, Emmetten (March 5 - 6 2015).
- Imaging with a light sheet  
J. Schneider, SystemsX retreat, Emmetten (March 5 - 6 2015).
- Magnetic force Microscope  
L. Selvaggi, SystemsX retreat, Emmetten (March 5 - 6 2015).
- Finite element modeling of growing tissues  
A. Keller, SystemsX retreat, Emmetten (March 5 - 6 2015).
- Folding of growing epithelial tissues in a stochastic cell-based model  
S. Urdy, SystemsX retreat, Emmetten (March 5 - 6 2015).
- Finite element modeling of pulsed, contractile forces  
F. Atzeni; SystemsX retreat, Emmetten (March 5 - 6 2015).
- MuViSPIM and 4D tissue analysis  
D. Dreher, SystemsX retreat, Emmetten (March 5 - 6 2015).

#### Invited lectures

- C.M. Aegerter: Forces and elastic properties in the wing imaginal disc of *Drosophila*  
Workshop "Forces in tissues", Paris, France (23.05.2014).
- C.M. Aegerter: Probing Anderson localization using weak nonlinear effects  
Summerschool "Waves and Disorder", Cargese, France (09.07.2014).
- C.M. Aegerter: Musterbildung in Physik, Chemie und Biologie  
Weiterbildung für Gymnasiallehrpersonen, University of Zurich (07.11.2014).
- C.M. Aegerter: Physical Biology and Biological Physics  
IMLS Seminar, University of Zurich (09.01.2015).
- C.M. Aegerter: Physik der ungeordneten Systeme ausserhalb des Gleichgewichts  
MNG Rämibühl, Zurich (02.02.2015).
- C.M. Aegerter: Mechanical regulation of growth in the *Drosophila* wing disc  
Forces at cell junctions workshop, Göttingen (11.02.2015).
- C.M. Aegerter: Measuring and modelling forces in tissues  
SystemsX retreat, Emmetten (05.03.2015).
- A. Keller: Deterioration and failure of glacier ice - a damage mechanics approach to glacier calving  
IMLS Seminar, University of Zurich (12.09.2014).
- J. Schneider: Ultrafast STED nanoscopy  
IMLS Seminar, University of Zurich (06.10.2014).

### 19.3 Bachelor and Master Theses

#### 19.3.1 Bachelor theses

- Development of a fault tolerant CAN bus interface based on the Raspberry Pi single board computer  
Timothy Dominik Widmer
- Measurement of W production cross section in proton-lead collisions  
Chris Marentini
- Kinetic energy spectra of Ar, Ne and He ions  
Annina Spescha
- RABBITT on Cu(111) at different points in the Brillouin zone  
David Becker-Koch
- $\mu$ SR investigation of the high-temperature superconductor  $(Cu_{0.75}Mo_{0.25})Sr_2(Y)Cu_2O_{7+\delta}$   
Leonid Leiva Ariosa
- Bau und Test eines HF-Messtages für kryogene Temperaturen  
Andreas Meier
- Tuning the Critical Field of the Bose-Einstein Condensation in  $Ba_{3x}Sr_xCr_2O_8$   
Philippe Hasler
- Untersuchung amorpher supraleitender Filme unterschiedlicher Dicke  
Julia Lonsky
- 112 - Kalibrierung und Weiterentwicklung eines Teststandes zur Charakterisierung von supraleitenden Photonenzählern  
Stefan Holenstein
- SandBox: A Facility for XENON Photosensors Characterization and Measurements of Photocathode Uniformity  
Sandro D'Amato

#### 19.3.2 Master theses

- The linear memory effect in gravitational waves  
Yannick Bötzel
- Measurement of the  $Z\gamma$  production cross section at  $\sqrt{s} = 8$  TeV at the LHCb experiment  
Moritz Küng
- A dedicated boosted Higgs boson tagging algorithm in CMS  
Thea Årestad
- In situ Ion Implantation beneath Boron Nitride Nanomesh  
Rubina Arulanantham
- First steps towards Graphene Nanoribbon device application  
Beat Lauber
- Sauberes Graphen durch katalytische Zersetzung von PMMA  
Simon Bachmann
- Characterization and Calibration of a Liquid Xenon Time-Projection Chamber  
Hrvoje Dujmović