

# 19 Publications

## 19.1 Elementary particles and their interactions

### 19.1.1 Theory of Elementary particles

#### Articles

- Analytic form of the two-loop planar five-gluon all-plus-helicity amplitude in QCD  
T. Gehrmann, J. M. Henn, and N. A. Lo Presti, Phys. Rev. Lett. **116** (2016) no.6, 062001  
Erratum: [Phys. Rev. Lett. **116** (2016) no.18, 189903].
- Pseudo-scalar Form Factors at Three Loops in QCD  
T. Ahmed, T. Gehrmann, P. Mathews, N. Rana, and V. Ravindran, JHEP **1511** (2015) 169.
- The rare decay  $H \rightarrow Z\gamma$  in perturbative QCD  
T. Gehrmann, S. Guns, and D. Kara, JHEP **1509** (2015) 038.
- Generalized threshold resummation in inclusive DIS and semi-inclusive electron-positron annihilation  
A. A. Almasy, N. A. Lo Presti and A. Vogt, JHEP **1601** (2016) 028.
- Spectral density constraints in quantum field theory  
P. Lowdon, Phys. Rev. D **92** (2015) no.4, 045023.
- Renormalization scheme dependence of the two-loop QCD corrections to the neutral Higgs-boson masses in the MSSM  
S. Borowka, T. Hahn, S. Heinemeyer, G. Heinrich and W. Hollik, Eur. Phys. J. C **75** (2015) no.9, 424.
- Calculation of multi-scale, multi-loop integrals using SecDec 3  
S. Borowka, Acta Phys. Polon. B **46** (2015) no.11, 2137.
- Interference contributions to gluon initiated heavy Higgs production in the Two-Higgs-Doublet Model  
N. Greiner, S. Liebler and G. Weiglein, Eur. Phys. J. C **76** (2016) no.3, 118.
- The  $q_T$  subtraction method for top quark production at hadron colliders  
R. Bonciani, S. Catani, M. Grazzini, H. Sargsyan and A. Torre, Eur. Phys. J. C **75** (2015) no.12, 581.
- Vector boson production at hadron colliders: transverse-momentum resummation and leptonic decay  
S. Catani, D. de Florian, G. Ferrera and M. Grazzini, JHEP **1512** (2015) 047.
- ZZ production at the LHC: fiducial cross sections and distributions in NNLO QCD  
M. Grazzini, S. Kallweit and D. Rathlev, Phys. Lett. B **750** (2015) 407.
- Transverse-momentum resummation for vector-boson pair production at NNLL+NNLO  
M. Grazzini, S. Kallweit, D. Rathlev and M. Wiesemann, JHEP **1508** (2015) 154.
- $W\gamma$  and  $Z\gamma$  production at the LHC in NNLO QCD,  
M. Grazzini, S. Kallweit and D. Rathlev, JHEP **1507** (2015) 085.
- Resummation ambiguities in the Higgs transverse-momentum spectrum in the Standard Model and beyond  
E. Bagnaschi, R. V. Harlander, H. Mantler, A. Vicini and M. Wiesemann, JHEP **1601** (2016) 090.
- Heavy charged Higgs boson production at the LHC  
C. Degrande, M. Ubiali, M. Wiesemann and M. Zaro, JHEP **1510** (2015) 145.
- Hadronic Higgs production through NLO + PS in the SM, the 2HDM and the MSSM  
H. Mantler and M. Wiesemann, Eur. Phys. J. C **75** (2015) no.6, 257.
- Pseudo-observables in electroweak Higgs production  
A. Greljo, G. Isidori, J. M. Lindert and D. Marzocca, Eur. Phys. J. C **76** (2016) no.3, 158.
- Anomalies in  $B$ -decays and  $U(2)$  flavour symmetry  
R. Barbieri, G. Isidori, A. Pattori and F. Senia, Eur. Phys. J. C **76** (2016) no.2, 67.

- Stability of the electroweak ground state in the Standard Model and its extensions  
L. Di Luzio, G. Isidori and G. Ridolfi, Phys. Lett. B **753** (2016) 150.
- Supersymmetric Dark Matter after LHC Run 1  
E. A. Bagnaschi *et al.*, Eur. Phys. J. C **75** (2015) 500.
- Probing the Charm Quark Yukawa Coupling in Higgs+Charm Production  
I. Brivio, F. Goertz and G. Isidori, Phys. Rev. Lett. **115** (2015) no.21, 211801.
- Higgs Pseudo Observables and Radiative Corrections  
M. Bordone, A. Greljo, G. Isidori, D. Marzocca and A. Pattori, Eur. Phys. J. C **75** (2015) no.8, 385.
- On the breaking of Lepton Flavor Universality in B decays  
A. Greljo, G. Isidori and D. Marzocca, JHEP **1507** (2015) 142.
- Electroweak bounds on Higgs pseudo-observables and  $h \rightarrow 4\ell$  decays  
M. Gonzalez-Alonso, A. Greljo, G. Isidori and D. Marzocca, Eur. Phys. J. C **75** (2015) 341.
- Knocking on new physics' door with a scalar resonance  
D. Buttazzo, A. Greljo and D. Marzocca, Eur. Phys. J. C **76** (2016) no.3, 116.
- Global constraints on anomalous triple gauge couplings in effective field theory approach  
A. Falkowski, M. Gonzalez-Alonso, A. Greljo and D. Marzocca, Phys. Rev. Lett. **116** (2016) no.1, 011801.
- Dark Matter and Gauged Flavor Symmetries  
F. Bishara, A. Greljo, J. F. Kamenik, E. Stamou and J. Zupan, JHEP **1512** (2015) 130.
- 76** - Associated production of a top pair and a Higgs boson beyond NLO  
A. Broggio, A. Ferroglia, B. D. Pecjak, A. Signer and L. L. Yang JHEP **1603** (2016) 124.
- NLO QCD+EW predictions for  $V + \text{jets}$  including off-shell vector-boson decays and multijet merging  
S. Kallweit, J. M. Lindert, P. Maierhofer, S. Pozzorini and M. Schönherr, JHEP **1604** (2016) 021.
- Measuring the signal strength in  $t\bar{t}H$  with  $Hb\bar{b}$   
N. Moretti, P. Petrov, S. Pozzorini and M. Spannowsky, Phys. Rev. D **93** (2016) no.1, 014019.
- Phenomenological analysis of Higgs boson production through gluon fusion in association with jets  
N. Greiner, S. Höche, G. Luisoni, M. Schönherr, J. C. Winter and V. Yundin, JHEP **1601** (2016) 169.
- Electroweak corrections to squark-antisquark production at the LHC  
W. Hollik, J. M. Lindert, E. Mirabella and D. Pagani, JHEP **1508** (2015) 099.

#### Oral Presentations

- S. Borowka: Renormalization scheme dependences in Higgs mass calculations  
KUTS working group meeting, LPTHE Paris (FR), May 2015.
- S. Borowka: Renormalization scheme dependence and  $\mathcal{O}(\epsilon)$  terms in MSSM Higgs-boson mass predictions  
Radcor-Loopfest 2015 Conference, UCLA (US), June 2015.
- S. Borowka: Numerical evaluation of multi-scale integrals with SecDec 3  
Amplitudes 2015 International Conference, Zurich (CH), July 2015.
- S. Borowka: Calculation of multi-scale, multi-loop integrals with SecDec 3  
Matter To The Deepest International Conference, Ustron (PL), September 2015.
- T. Gehrmann: Two loop corrections to vector boson pair production  
Higgstools meeting, Freiburg, 15. 04. 2015.
- T. Gehrmann: Forming higher orders QCD  
JosFest Meeting, NIKHEF, Amsterdam, 03. 07. 2015.

- T. Gehrmann: Conference Summary  
QCD@LHC 2015, London, 05. 09. 2015.
- T. Gehrmann: Lectures on QCD calculations  
Atrani doctoral school "Methods for precision calculations", Atrani, Italy, 5-9. 10. 2015.
- T. Gehrmann: Precision Physics with jet observables  
Kolloquium Wuerzburg, 12. 11. 2015.
- M. Grazzini: Recent developments in inclusive and differential Higgs cross sections  
Higgstools Meeting, Freiburg, 14. 04. 2015.
- M. Grazzini: Precise SM predictions for the LHC  
CHIPP plenary meeting, Chateau de Bossey, 29. 06. 2015.
- M. Grazzini: Higgs theory  
Les Houches Workshop "Physics at TeV colliders", Les Houches, 02. 06. 2015.
- M. Grazzini: Standard Model Theory for Collider Physics  
EPS Vienna, Austria, 27. 07. 2015.
- M. Grazzini: Vector boson pair production at NNLO  
QCD@LHC, London, 03. 09. 2015.
- M. Grazzini: Lectures on QCD resummation  
Atrani doctoral school, "Methods for precision calculations", Atrani, Italy, 5-9. 10. 2015.
- M. Grazzini: Transverse-momentum resummation for heavy-quark production at hadron colliders  
REF2015 Workshop, DESY, 03. 11. 2015.
- N. Greiner: Higgs production in gluon fusion in association with jets  
QCD@LHC Queen Mary University, London 1-5. 09. 2015.
- N. Greiner: LHC physics with GoSam 2.0  
Desy theory workshop, Hamburg, 29. 9.-2. 10. 2015.
- N. Greiner: BSM physics with GoSam  
Non-conventional searches at the LHC, , Daejeon, Korea, 14.-18. 12. 2015
- A. Greljo: Pseudo-observables in Higgs decays  
Portoroz 2015: Particle Phenomenology From Early Universe to High Energy Colliders, Slovenia, 08. 04. 2015.
- A. Greljo: Precision Higgs beyond the SM  
Flavour 2015: New Physics at High Energy and High Precision, MIAPP, Munich, 01. 06. 2015.
- A. Greljo: Going beyond the "kappa-framework": Higgs Pseudo-observables  
The 27th International Symposium on Lepton Photon Interactions at High Energies, Ljubljana, 21. 08. 2015.
- A. Greljo: Going beyond the "kappa-framework": Higgs Pseudo-observables  
Seminaire de Physique des Particules du LPT, LPT Orsay, 29. 10. 2015.
- A. Ilnicka: Effects of higher dimension operators on Higgs cross sections  
First HiggsTools Annual Meeting, Freiburg, 17. 05. 2015.
- A. Ilnicka: Effects of higher dimensional operators on the Higgs  $p_T$  spectrum  
Higgs Hunting, Orsay, 31. 07. 2015.
- A. Ilnicka: Effects of Beyond Standard Model physics on Higgs  $p_T$  spectra in Effective Field Theory approach  
European Physical Society Conference on High Energy Physics, Wien, 2. 07. 2015.
- G. Isidori: Higgs Pseudo-observables  
Higgs Days workshop, Santander, Spain, 14-18. 09. 2015.

- G. Isidori: Rare Higgs decays  
HL-LHC workshop, CERN 11-13. 05. 2015.
- G. Isidori: On the breaking of LFU in B decays  
LHCb implication workshop CERN, 3-5. 11. 2015.
- G. Isidori: Theoretical considerations on low-energy physics  
CHIPP plenary meeting, Chateau de Bossey, 30. 06. 2015.
- C. L. Javier: The resummed Higgs  $p_t$  spectrum  
Higgs couplings 2015, Lumley Castle, 12-15. 10. 2015.
- D. Kara: The rare decay  $H \rightarrow Z\gamma$  in perturbative QCD  
Radcor-Loopfest 2015, UCLA, USA, 15. 06. 2015.
- J. Lindert: Automated NLO QCD+EW simulations with OpenLoops and predictions for V+multijet production  
Invited Seminar, University of Mainz, Mainz, Germany, 28. 04. 2015.
- J. Lindert: Automated NLO QCD+EW simulations with OpenLoops and predictions for V+multijet production  
Invited Seminar, University of Freiburg, Freiburg, Germany, 19. 5. 2015.
- J. Lindert: Automated NLO QCD+EW corrections with OpenLoops for W + Multijet production at the LHC  
Radcor-Loopfest 2015, UCLA, LA, USA, 16. 06. 2015.
- J. Lindert: Automated NLO QCD+EW simulations with OpenLoops and predictions for V+multijet production  
Invited Seminar, University of Dresden, Dresden, Germany, 02. 07. 2015.
- 78 - J. Lindert: Automated NLO QCD+EW corrections for V+multijet production  
QCD@LHC 2015, Queen Mary University of London, London, UK, 04. 09. 2015.
- J. Lindert: Automated NLO QCD+EW corrections for the LHC  
DESY Theory Workshop, DESY, Hamburg, Germany, 30. 09. 2015.
- J. Lindert: NLO QCD+EW predictions for W+jets at 100 TeV  
QCD, EW and tools at 100 TeV, CERN, Switzerland, 08. 10. 2015.
- J. Lindert: Electroweak corrections to squark and gluino production at the LHC  
Annual Meeting of the Helmholtz Alliance "Physics at the Terascale", DESY, Hamburg, Germany, 18. 12. 2015.
- J. Lindert: Automated NLO QCD+EW corrections for the LHC and precise predictions for V+multijet production  
Invited Seminar, University of Bonn, Bonn, Germany, 07. 12. 2015.
- J. Lindert: Precise predictions for V+multijet production including electroweak corrections  
Invited Seminar, Université catholique de Louvain, Louvain-la-Neuve, Belgium, 16. 12. 2015.
- J. Lindert: Applications of NLO EW corrections  
Sherpa user annual meeting, Dresden, Germany, 07. 01. 2016.
- N. A. Lo Presti: Five-point two-loop Master Integrals in QCD  
QCD@LHC 2015, Queen Mary, University of London, United Kingdom, 01. 09. 2015.
- N. A. Lo Presti: Threshold resummation from the D-dimensional structure of partonic cross sections  
Workshop "Threshold logarithms beyond leading power", Higgs Centre for Theoretical Physics, University of Edinburgh, United Kindgom, 29. 02. 2016.
- P. Lowdon: Boundary terms in the decomposition of nucleon spin  
XXIII international workshop on Deep Inelastic Scattering, Dallas, 28. 04. 2015.
- D. Marzocca: Higgs to 4-fermion decays  
9th Workshop of the LHC Higgs Cross Section Working group, CERN, Switzerland, 23. 01. 2015.

- D. Marzocca: Higgs pseudo-observables  
Invited Seminar, DAMPT, Cambridge, 15. 05. 2015.
- D. Marzocca: Pseudo-observables in Higgs decays  
DIS 2015, Dallas, Texas, USA, 28. 05. 2015.
- D. Marzocca: Violation of lepton-flavor universality in B decays  
Invited Seminar, Montpellier, 11. 06. 2015.
- D. Marzocca: Pseudo-observables in Higgs decays  
27th Rencontres de Blois 2015, Blois, France, 30. 06. 2015.
- D. Marzocca: PO from continuous deformations  
10th Workshop of the LHC Higgs Cross Section Working group, CERN, Switzerland, 15. 07. 2015.
- D. Marzocca: Higgs physics with heavy new physics  
LHCP 2015, St. Petersburg, Russia, 31 August 2015.
- D. Marzocca: Higgs PO, production and decay beyond the kappa framework  
Particle Theory Seminar, UZH, 13. 10. 2015.
- N. Moretti:  $ttH$  searches in the  $H \rightarrow bb$  channel: precision theory simulation  
Sinergia meeting, Lausanne, 17. 12. 2015.
- S. Pozzorini: Precise electroweak predictions for  $V$ +multijet production  
Standard Model at LHC, Florence, 23. 4. 2015.
- S. Pozzorini: Scattering Amplitudes and (N)NLO Simulations with OpenLoops  
Theory Seminar, LPTHE, Paris VI University, 4. 5. 2015.
- S. Pozzorini: Scattering Amplitudes and (N)NLO Simulations with OpenLoops  
Theory Seminar, Universita degli Studi, Milano, 21. 5. 2015.
- S. Pozzorini: Electroweak Theory at the LHC  
Large Hadron Collider Physics Conference, St.Petersburgh, 2. 9. 2015.
- S. Pozzorini: Monte Carlo for  $ttH$  and Standard Model Background  
Higgs Couplings 2015, Lumley Castle, 13. 10. 2015.
- S. Pozzorini: Scattering Amplitudes and Precision Simulations for the LHC  
Theory Colloquium, DESY Hamburg, 2. 12. 2015.
- S. Pozzorini: Scattering Amplitudes and Precision Simulations for the LHC  
Particle Physics Seminar, Vienna University, Austria, 26. 1. 2016.
- S. Pozzorini:  $ttH/tH$  working group: status of YR4 preparation and future activities  
Workshop of LHC Higgs Cross Section Working Group, CERN, Geneva, Switzerland, 14. 1. 2016.
- S. Pozzorini: Precision Theory Simulations for the LHC  
Meeting of the German Physical Society, DESY, Hamburg, Germany, 4. 3. 2016.
- S. Pozzorini: Recent Theoretical Progress in QCD and EW Corrections  
Rencontres de Physique de la Vallée d'Aoste, La Thuile, Italy, 9. 3. 2016.
- D. Rathlev: Theory review on diboson production  
SM@LHC, Florence; 22. 04. 2015.
- D. Rathlev: NNLO QCD predictions for  $WW$  and  $ZZ$  production  
Radcor-Loopfest 2015, Los Angeles, 18. 06. 2015.
- D. Rathlev: QCD corrections to  $pp \rightarrow VV$  at NNLO  
MBI, DESY, Hamburg; 03. 09. 2015.

- D. Rathlev: Vector pair cross sections at 100 TeV  
FCC workshop, CERN, Geneva; 07. 10. 2015.
- H. Sargsyan: Higgs  $p_T$  in the Standard Model  
HXSWG meeting, CERN, 07. 05. 2015.
- A. Signer: What is  $m_t$ ?  
Workshop on the Top mass, Frascati, 6-8. 05. 2015.
- A. Signer: Low-energy LFV and Precision Physics  
Flavour 2015, Munich 1-3. 06. 2015.
- A. Signer: Ein Blick in die innersten Eigenschaften der Materie  
Naturwissenschaftliche Gesellschaft, Sankt Gallen 07. 10. 2015.
- A. Visconti : Regularization scheme dependence of two-loop amplitudes  
Seminar, Max-Planck-Institut, Munich, 27. 05. 2015.
- M. Wiesemann: aMCSusHi: combining MG5 aMC@NLO with SusHi  
ERC miniworkshop, CERN, 01. 06. 2015.
- M. Wiesemann: Transverse momentum resummation of colorless final states at the NNLO+NNLL  
Radcor-Loopfest 2015, Los Angeles, 15. 06. 2015.
- M. Wiesemann:  $bbH$  : Theory report  
10th Workshop of the LHC Higgs Cross Section Working Group, CERN, 10. 07. 2015.
- M. Wiesemann: Automation of transverse momentum resummation at NNLO+NNLL and its application to  
 $ZZ$  and  $WW$  pairs  
Theorie-Palaver Seminar (Mainz), 21. 07. 2015.
- M. Wiesemann: Higgs (and top) physics from the theory perspective  
Matter to the Deepest: XXXIX International Conference of Theoretical Physics, Ustron, 14. 09. 2015.
- M. Wiesemann: BSM effects on the resummed transverse momentum spectrum of the Higgs in the EFT approach  
Sinergia Meeting, Lausanne, 17. 12. 2015.
- M. Wiesemann:  $bbH$ : Status report for YR4  
11th Workshop of the LHC Higgs Cross Section Working Group, CERN, 13. 01. 2016.
- M. Zoller: Stability of the Standard Model ground state: a precision analysis  
International School of Subnuclear Physics (ISSP), Erice, 28. 06. 2015.

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### 19.1.2 Astrophysics and General Relativity

#### Articles

- The remains of a spinning, hyperbolic encounter  
L. De Vittori, A. Gopakumar, A. Gupta and Ph. Jetzer,  
Proceedings of the LISA Symposium X (Gainesville, May 18-23, 2014), J. Phys. Conf. Ser. 610 (2015) 1, 012048.
- A Time Domain Waveform for Testing General Relativity  
C. Huwyler, Ed. Porter and Ph. Jetzer,  
Proceedings of the LISA Symposium X (Gainesville, May 18-23, 2014), J. Phys. Conf. Ser. 610 (2015) 1, 012046.
- Testing General Relativity and Alternative Theories of Gravity with Space-based Atomic Clocks and Atom Interferometers  
R. Bondarescu, A. Schäfer, Ph. Jetzer, R. Angéilil, P. Saha and A. Lundgren,  
in the Proceeding for ICNFP 2014, EPJ Web Conf. 95 (2015), 02002.

- Free-flight experiments in LISA Pathfinder  
(The LISA Pathfinder Collaboration) M. Armano, H. Audley, G. Auger, J. Baird, P. Binetruy, M. Born, D. Bortoluzzi, N. Brandt, A. Bursi, M. Caleno, A. Cavalleri, A. Cesarini, M. Cruise, C. Cutler, K. Danzmann, I. Diepholz, R. Dolesi, N. Dunbar, L. Ferraioli, V. Ferroni, E. Fitzsimons, M. Freschi, J. Gallegos, C. Garcia Marirrodriga, R. Gerndt, L. Gesa, F. Gibert, D. Giardini, R. Giusteri, C. Grimani, I. Harrison, G. Heinzel, M. Hewitson, D. Hollington, M. Hueller, J. Huesler, H. Inchauspé, O. Jennrich, P. Jetzer, B. Johlander, N. Karnesis, B. Kaune, N. Korsakova, C. Killow, I. Lloro, R. Maarschalkerweerd, S. Madden, P. Maghami, D. Mance, V. Martin, F. Martin-Porqueras, I. Mateos, P. McNamara, J. Mendes, L. Mendes, A. Moroni, M. Nofrarias, S. Paczkowski, M. Perreur-Lloyd, A. Petiteau, P. Pivato, E. Plagnol, P. Prat, U. Ragnit, J. Ramos-Castro, J. Reiche, J.A. Romera Perez, D. Robertson, H. Rozemeijer, G. Russano, P. Sarra, A. Schleicher, J. Slutsky, C.F. Sopena, T. Sumner, D. Texier, J. Thorpe, C. Trenkel, H.B. Tu, D. Vetrugno, S. Vitale, G. Wanner, H. Ward, S. Waschke, P. Wass, D. Wealthy, S. Wen, W. Weber, A. Wittchen, C. Zanoni, T. Ziegler, P. Zweifel, Proceedings of the LISA Symposium X (Gainesville, May 18-23, 2014) J. Phys. Conf. Ser. 610 (2015) 1, 012006.
- Ground-based optical atomic clocks as tools to monitor vertical surface motion  
R. Bondarescu, A. Schäfer, A. Lundgren, G. Hetényi, N. Houlié, Ph. Jetzer and M. Bondarescu, Geophysical Journal International **202** (2015) 1770-1774.
- The potential of continuous, local atomic clock measurements for earthquake prediction and volcanology  
M. Bondarescu, R. Bondarescu, Ph. Jetzer and A. Lundgren, in the Proceeding for ICNFP 2014, EPJ Web Conf. **95** (2015), 04009.
- In-flight thermal experiments for LISA Pathfinder: Simulating temperature noise at the Inertial Sensors  
The LISA Pathfinder Collaboration, Proceedings of the LISA Symposium X (Gainesville, May 18-23, 2014) J. Phys. Conf. Ser. 610 (2015) 1, 012023.
- Disentangling the magnetic force noise contribution in LISA Pathfinder  
The LISA Pathfinder Collaboration, Proceedings of the LISA Symposium X (Gainesville, May 18-23, 2014) J. Phys. Conf. Ser. 610 (2015) 1, 012024.
- A Strategy to Characterize the LISA-Pathfinder Cold Gas Thruster System  
The LISA Pathfinder Collaboration, Proceedings of the LISA Symposium X (Gainesville, May 18-23, 2014) J. Phys. Conf. Ser. 610 (2015) 1, 012026.
- Bayesian statistics for the calibration of the LISA Pathfinder experiment  
The LISA Pathfinder Collaboration, Proceedings of the LISA Symposium X (Gainesville, May 18-23, 2014) J. Phys. Conf. Ser. 610 (2015) 1, 012027.
- A noise simulator for eLISA: Migrating LISA Pathfinder knowledge to the eLISA mission  
The LISA Pathfinder Collaboration, Proceedings of the LISA Symposium X (Gainesville, May 18-23, 2014) J. Phys. Conf. Ser. 610 (2015) 1, 012036.
- Planck revealed bulk motion of Centaurus A lobes  
F. De Paolis, V.G. Gurzadyan, A.A. Nucita, G. Ingrosso, A.L. Kashin, H.G. Khachatryan, S. Mirzoyan, G. Yegorian, Ph. Jetzer, A. Qadir and D. Vetrugno, Astron. and Astrophys. **580**, (2015) L8.
- Planck view of the M 82 galaxy  
V.G. Gurzadyan, F. De Paolis, A.A. Nucita, G. Ingrosso, A.L. Kashin, H.G. Khachatryan, S. Sargsyan, G. Yegorian, Ph. Jetzer, A. Qadir and D. Vetrugno, Astron. and Astrophys. **582**, (2015) A77.
- New effective-one-body Hamiltonian with next-to-leading order spin-spin coupling  
S. Balmelli and T. Damour, Phys. Rev. D **92** (2015), 124022.
- Tidal polarizability effects in neutron star mergers  
S. Bernuzzi, A. Nagar, S. Balmelli, T. Dietrich and M. Ujevic, J. Phys. Conf. Ser. 610 (2015) 1, 012047.
- Lensing time delays as a substructure constraint: a case study with the cluster SDSS J1004+4112  
Mohammed, Irshad; Saha, Prasenjit; Liesenborgs, Jori, Publications of the Astronomical Society of Japan, Volume 67, id.219 pp.

- The behaviour of dark matter associated with four bright cluster galaxies in the 10 kpc core of Abell 3827  
R. Massey, L. Williams, R. Smit, M. Swinbank, T.D. Kitching, D. Harvey, M. Jauzac, H. Israel, D. Clowe, A. Edge, M. Hilton, E. Jullo, A. Leonard, J. Liesenborgs, J. Merten, I. Mohammed, D. Nagai, J. Richard, A. Robertson, P. Saha, R. Santana, J. Stott, E. Tittley,  
Monthly Notices of the Royal Astronomical Society, Volume 449, Issue 4, p.3393-3406
- Geometrical versus wave optics under gravitational waves  
Angélil, Raymond; Saha, Prasenjit, Physical Review D, Volume 91, Issue 12, id.124007
- SPACE WARPS - I. Crowdsourcing the discovery of gravitational lenses  
P.J. Marshall, A. Verma, A. More, C.P. Davis, S. More, A. Kapadia, M. Parrish, C. Snyder, J. Wilcox, E. Baeten, C. Macmillan, C. Cornen, M. Baumer, E. Simpson, C.J. Lintott, D. Miller, E. Paget, R. Simpson, A.M. Smith, R. Küng, P. Saha, T.E. Collett,  
Monthly Notices of the Royal Astronomical Society, Volume 455, Issue 2, p.1171-1190
- SPACE WARPS- II. New gravitational lens candidates from the CFHTLS discovered through citizen science  
A. More, A. Verma, P.J. Marshall, S. More, E. Baeten, J. Wilcox, C. Macmillan, C. Cornen, A. Kapadia, M. Parrish, C. Snyder, C.P. Davis, R. Gavazzi, C.J. Lintott, R. Simpson, D. Miller, A.M. Smith, E. Paget, P. Saha, R. Küng, T.E. Collett,  
Monthly Notices of the Royal Astronomical Society, Volume 455, Issue 2, p.1191-1210
- Light versus dark in strong-lens galaxies: dark matter haloes that are rounder than their stars  
C. Bruderer, J.I. Read, J.P. Coles, D. Leier, E.E. Falco, I. Ferreras, P. Saha,  
Monthly Notices of the Royal Astronomical Society, Volume 456, Issue 1, p.870-884

**82** Oral Presentations

- Simone Balmelli: The description of next-to-leading order spin-spin effects in an Effective-One-Body Hamiltonian  
14th Marcel Grossmann Meeting, Rome, July 12-18 2015.
- Philippe Jetzer: Gravitational wave detection from space with eLISA  
PSI, Kolloquium, 21 May 2015.
- Philippe Jetzer: Gravitational wave detection from space with eLISA  
Kolloquium University of Oldenburg, 8 June 2015.
- Philippe Jetzer: From LISA Pathfinder to LISA  
Special seminar ETH Zürich, 11 December 2015.
- Rizwana Kausar: Gravitational wave polarization modes in  $f(R)$  theories  
14th Marcel Grossmann Meeting, Rome, July 12-18 2015.
- Rafael Küng: Lensing galaxies in the CFHT legacy survey  
14th Marcel Grossmann Meeting, Rome, July 12-18 2015.
- Andreas Schäfer: Prospects for testing general relativity and alternative theories with clocks on satellites in Earth orbit  
14th Marcel Grossmann Meeting, Rome, July 12-18 2015.

**19.1.3 GERDA**

Articles

- Production and Characterization of 228-Th Calibration Sources with Low Neutron Emission for GERDA  
L. Baudis, G. Benato, P. Carconi, C.M. Cattadori *et al.*, JINST 10 12, P12005 (2015).
- Double beta decay of 76-Ge into Excited States with GERDA Phase I  
M. Agostini, M. Allardt, A.M. Bakalyarov, M. Balata, I. Barabanov, N. Barros, L. Baudis, C. Bauer *et al.* (GERDA Collaboration), Journal of Physics G 42 11, 115201 (2015).



## Oral Presentations

- L. Baudis: Double Beta Decay: non-Ge Experimental Programmes  
Meeting on the Next Generation  $^{76}\text{Ge}$  Experiment, Arnold Sommerfeld House, Munich, April 26, 2016.
- M. Miloradovic: The GERDA experiment: Search for the Neutrinoless Double Beta Decay  
Magellan Workshop 2016, DESY Hamburg, Germany, March 2016.
- G. Benato: Status and perspectives of the GERDA experiment  
Seminar at LNGS, 30 September 2015.
- M. Miloradovic: Gas Emanation System for the GERDA experiment  
SPS/OEPG meeting, TU Wien, Vienna, Austria, September 2015.
- L. Baudis: Neutrinoless Double Beta Decay and GERDA  
CHIPP plenary meeting, Chateau de Bossey, July 1, 2015.
- G. Benato: Improvement of the Energy Resolution via an Optimized Digital Signal Processing in GERDA Phase I  
ISSP 2015, Erice, 24 June - 3 July 2015.
- L. Baudis: Double Beta Decay an Experimental Overview  
Invisibles Workshop, Madrid, June 24, 2015.
- G. Benato: Digital Signal Shaping for Germanium Detectors: Theory and Practice  
PhD workshop on experimental aspects of rare event searches, Tübingen, 18-19 June 2015.
- M. Walter: The GERDA Experiment for the Search of Neutrinoless Double Beta Decay  
Rencontres de Blois, Chateau Royal de Blois, May 31, 2015.
- G. Benato: Search for Neutrinoless Double Beta Decay with the GERDA Experiment  
Seminar at Yale University, 29 May 2015.
- G. Benato: Search for Neutrinoless Double Beta Decay with the GERDA Experiment  
CIPANP 2015, Vail Colorado, 19-24 May 2015.

## Outreach

- L. Baudis: Dark matter  
zurich.minds Deep Dive Zurich Uniturm, April 6, 2016.
- M. Galloway: Dark Matter  
St. Elhelburga's Centre for Reconciliation and Peace, London March 11, 2016.
- L. Baudis: Die unerträgliche Leichtigkeit der Neutrinos  
Senioren-Universität Zurich, Zurich, March 8, 2016.

## 19.1.4 XENON/DARWIN

### Articles

- Dark Matter Detection  
Laura Baudis, J. Phys. G43 4, 044001 (2016).
- Physics Reach of the XENON1T Dark Matter Experiment  
E. Aprile *et al.* (XENON Collaboration) JCAP 1604 04, 027 (2016).
- Dark Matter Searches  
Laura Baudis, Ann. Phys. (Berlin), 1-10 (2015).

- Search for Event Rate Modulation in XENON100 Electronic Recoil Data  
E. Aprile *et al.* (XENON Collaboration), *Phys. Rev. Lett.* 115, 091302 (2015).
- Exclusion of Leptophilic Dark Matter Models using XENON100 Electronic Recoil Data  
E. Aprile *et al.* (XENON Collaboration), *Science* 349, 851 (2015).
- Cosmogenic Activation of Xenon and Copper  
Laura Baudis, Alexander Kish, Francesco Piastra, Marc Schumann, *Eur. Phys. J. C* 75 10, 485 (2015).
- Dark Matter Sensitivity of Multi-ton Liquid Xenon Detectors  
Marc Schumann, Laura Baudis, Lukas Buetikofer, Alexander Kish, Marco Selvi, *JCAP* 1510 10, 016 (2015).
- Lowering the Radioactivity of the Photomultiplier Tubes for the XENON1T Dark Matter Experiment  
E. Aprile *et al.* (XENON Collaboration), *Eur. Phys. Journal C* 75/11, 546 (2015).

#### Oral Presentations

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- L. Baudis: Dark Matter Detection with XENON and DARWIN  
Seminar, Department of Physics, University of Oslo, Oslo, May 4, 2016.
- L. Baudis: Searching for Dark Matter with XENON and DARWIN  
UCSC seminar, Santa Cruz, February 22, 2016.
- L. Baudis: Dark Matter and Other Rare Event Searches with DARWIN  
UCLA Dark Matter, Los Angeles, February 19, 2016.
- L. Baudis: XENONnT  
the Next Step XENON1T Inauguration, Gran Sasso Laboratory, November 11, 2015.
- L. Baudis: Searching for Dark Matter with XENON and DARWIN  
Graduierertenkolleg Seminar, RWTH Aachen, July 14, 2015.
- L. Baudis: Dark Matter Detection with XENON and DARWIN  
KCETA Colloquium, Karlsruhe Institute of Technology, May 21, 2015.
- L. Baudis: The State-of-the-Art in the Search for Dark Matter  
Physics at FOM, Veldhoven, January 20, 2016.
- L. Baudis: Dark Matter Detection - an Experimental Overview  
28th Texas Symposium on Relativistic Astrophysics, Geneva, December 14, 2015.
- A. Kish: Xenon Detectors for Dark Matter Searches  
Seminar at EPFL, Lausanne, November 30, 2015.
- L. Baudis: Dark Matter Detection in the Milky Way  
Physics Colloquium, University of Barcelona, November 26, 2015.
- A. Kish: Searches for Particle Dark Matter with the XENON100 and XENON1T Experiments  
Seminar at Imperial College London, November 5, 2015.
- L. Baudis: Dark Matter Detection in the Milky Way  
Physics Colloquium, Princeton University, NJ, October 15, 2015.
- L. Baudis: Dark Matter Detection in the Milky Way  
Physics Colloquium, Columbia University, NY, October 12, 2015.
- F. Piastra: Cosmogenic Activation of Xenon  
6th Young Researchers Meeting, L'Aquila, October 12, 2015.
- L. Baudis: Direct Dark Matter Detection  
Brookhaven Forum 2015, Brookhaven, October 9, 2015.

- P. Pakarha: The XENON1T Light Calibration System  
SPS meeting, TU Wien, Vienna, Austria, September 2015.
- L. Baudis: The State-of-the-Art in the Search for Dark Matter  
Inaugural Zwicky Symposium, Braunwald, September 4, 2015.
- P. Pakarha: The XENON1T Light Calibration System  
Joint UZH-ETH PhD seminar, PSI Villigen, August 27, 2015.
- P. Barrow: Searching for Bosonic SuperWIMPs in XENON100  
Joint UZH-ETH PhD seminar, PSI Villigen, August 27, 2015.
- D. Mayani: Studies of the XENON100 electromagnetic background  
Joint UZH-ETH PhD seminar, PSI Villigen, August 27, 2015.
- F. Piastra: Cosmogenic Activation of Xenon  
Joint UZH-ETH PhD seminar, PSI Villigen, August 27, 2015.
- G. Kessler: XENON Dark Matter Project  
17th Lomonosov Conference on Elementary Particle Physics 2015, Moscow, Russia, 24. August 2015.
- L. Baudis: Direct Detection of Dark Matter  
Lepton Photon 2015, Ljubljana, August 20, 2015.
- A. Kish: Wavelength-shifters for Argon, VUV-sensitive SiPMs, and Measurements of Xenon Response  
to Low Energy Neutrons  
LIDINE-2015, Light Detection in Noble Liquids, State University of New York, Albany, USA, August 29, 2015.
- A. Kish: Dark Matter Searches with Liquid Xenon and Latest Results from the XENON100 Experiment  
Seminar at Royal Holloway, University of London, August 12, 2015.
- A. Kish: The XENON Project for Direct Dark Matter Detection  
EPS HEP-2015, European Physical Society Conference on High Energy Physics, Vienna, Austria, July 24, 2015.
- P. Barrow: Searching for Bosonic SuperWIMPs in XENON100  
Invisibles Workshop, Madrid, June 25, 2015.
- D. Mayani: Studies of the XENON100 Electromagnetic Background  
Invisibles Workshop, Madrid, June 25, 2015.
- L. Baudis: Direct Dark Matter Detection Experiments  
an Overview CRC 634 Achievements and Outlook, Darmstadt, June 10, 2015.
- L. Baudis: Highlights from the XENON Dark Matter Search  
The Spacetime Odyssey Continues, Stockholm, June 3, 2015.
- L. Baudis: Direct dark matter detection experiments: an overview  
Solvay-Francqui workshop on neutrinos, Brussels, May 28, 2015.
- L. Baudis: R&D for Dark Matter Experiments Based on Liquefied Noble Gases and on Crystals Operated  
at mK Temperatures  
APPEC SAC meeting, Rome, May 19, 2015.

### 19.1.5 DAMIC

#### Articles

- Measurement of Radioactive Contamination in the High-Resistivity Silicon CCDs of the DAMIC Experiment  
DAMIC Collaboration, A. Aguilar-Arevalo *et al.*, JINST **10** (2015) no.08, P08014
- The DAMIC Dark Matter Experiment  
DAMIC Collaboration, J. R. T. de Mello Neto *et al.*, Proceedings, 34th International Cosmic Ray Conference (ICRC 2015): The Hague, The Netherlands, July 30-August 6, 2015, C15-07-30
- Status of the DAMIC Direct Dark Matter Search Experiment  
DAMIC Collaboration, A. Aguilar-Arevalo *et al.*, Proceedings, 12th Conference on the Intersections of Particle and Nuclear Physics (CIPANP 2015), C15-05-19

#### Oral Presentations

- J. Liao: DAMIC : Low mass WIMP detection with scientific CCDs  
DPF 2015, Ann arbor, U Michigan, U.S., Aug 5th, 2015.
- J. Liao: Low mass WIMP detection with scientific CCDs  
New perspective 2015, Fermilab, Chicago, U.S., June 9, 2015.
- B. Kilminster: DAMIC: Dark matter in CCDs for low energy recoil searches  
Munich Low mass dark matter conference Max Planck, Munich, Germany, December 1st, 2015.
- 86** - B. Kilminster: DAMIC: Dark matter in CCDs, recent developments to low threshold  
Cairo Dark Matter Conference, Cairo, Egypt, December 16, 2015.

### 19.1.6 SHiP

#### Articles

- Facility to Search for Hidden Particles (SHiP) at the CERN SPS  
SHiP-Collaboration, M. Anelli *et al.*, arXiv:1504.04956v1, CERN-SPSC-2015-016.
- New facility with a dedicated detector to search for new long-lived neutral particles  
Elena Graverini, PoS (EPS-HEP2015) 103, Proceeding of EPS-HEP 2015.

#### Conference contributions

- Elena Graverini: A new facility with a dedicated detector to search for long-lived neutral particles  
PS-HEP 2015, Vienna (Austria), 22-29th July 2015.
- Elena Graverini: SHiP: A new facility with a dedicated detector to search for long-lived neutral particles and the tau neutrino properties  
Université Libre de Bruxelles, 26th February 2016.
- Nicola Serra: Heavy Neutrinos  
nuFact 2015, CBPF, Rio de Janeiro, 10th-15th August 2015.
- Nicola Serra: Searching for New Particles at high and low energies  
Universidad de Santiago de Compostela (USC), Spain, 24th February 2016.
- Nicola Serra: Searching for New Particles at high and low energies  
Universidad de Santiago de Compostela (USC), Spain, 24th February 2016.

### 19.1.7 CTA

#### Conference contribution

- G. Pühlhofer *et al.*: FlashCam: a fully-digital camera for the medium-sized telescopes of the Cherenkov Telescope Array 34th International Cosmic Ray Conference (ICRC2015), The Hague (The Netherlands), PoS(ICRC2015)1039.

### 19.1.8 $\mu^+ \rightarrow e^+e^-e^+$

#### Conference contribution

- Roman Gredig: Search for the decay  $\mu^+ \rightarrow e^+e^-e^+$   
NuFact15 : XVII International Workshop on Neutrino Factories and Future Neutrino Facilities.

### 19.1.9 H1

The 2015 H1 Collaboration has 141 members including K. Müller, P. Robmann, U. Straumann and P. Truöl.

#### Articles

- Exclusive  $\rho^0$  meson photoproduction with a leading neutron at HERA  
H1 ZEUS Collaboration, V. Andreev *et al.*, Eur. Phys. J. C **76** (2016) no.1, 41.
- Combination of measurements of inclusive deep inelastic  $e^\pm p$  scattering cross sections and QCD analysis of HERA data  
H1 and ZEUS Collaborations, H. Abramowicz *et al.*, Eur. Phys. J. C **75** (2015) no.12, 580.
- Combination of differential  $D^\pm$  cross-section measurements in deep-inelastic ep scattering at HERA  
H1 and ZEUS Collaborations, H. Abramowicz *et al.*, JHEP **1509** (2015) 149.
- Diffractive Dijet Production with a Leading Proton in  $ep$  Collisions at HERA  
H1 Collaboration, H. Abramowicz *et al.*, JHEP **1505** (2015) 056.

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### 19.1.10 CMS

#### Articles

- Measurements of  $t\bar{t}$  spin correlations and top quark polarization using dilepton final states in pp collisions at  $\sqrt{s} = 8$  TeV  
V. Khachatryan *et al.* [CMS Collaboration], Phys. Rev. D **93** (2016) no.5, 052007.
- Correlations between jets and charged particles in PbPb and pp collisions at  $\sqrt{s_{NN}} = 2.76$  TeV  
V. Khachatryan *et al.* [CMS Collaboration], JHEP **1602** (2016) 156.
- Measurement of differential and integrated fiducial cross sections for Higgs boson production in the four-lepton decay channel in pp collisions at  $\sqrt{s} = 7$  and 8 TeV  
V. Khachatryan *et al.* [CMS Collaboration], JHEP **1604** (2016) 005.
- Search for narrow resonances decaying to dijets in proton-proton collisions at  $\sqrt{s} = 13$  TeV  
V. Khachatryan *et al.* [CMS Collaboration], Phys. Rev. Lett. **116** (2016) no.7, 071801.
- Event generator tunes obtained from underlying event and multiparton scattering measurements  
V. Khachatryan *et al.* [CMS Collaboration], Eur. Phys. J. C **76** (2016) no.3, 155.
- Search for dark matter and unparticles produced in association with a  $Z$  boson in proton-proton collisions at  $\sqrt{s} = 8$  TeV  
V. Khachatryan *et al.* [CMS Collaboration], Phys. Rev. D **93** (2016) no.5, 052011.
- Search for anomalous single top quark production in association with a photon in pp collisions at  $\sqrt{s} = 8$  TeV  
V. Khachatryan *et al.* [CMS Collaboration], JHEP **1604** (2016) 035.
- Measurement of top quark polarisation in t-channel single top quark production  
V. Khachatryan *et al.* [CMS Collaboration], JHEP **1604** (2016) 073.

- Search for excited leptons in proton-proton collisions at  $\sqrt{s} = 8$  TeV  
V. Khachatryan *et al.* [CMS Collaboration], JHEP **1603** (2016) 125.
- Reconstruction and identification of  $\tau$  lepton decays to hadrons and  $\nu_\tau$  at CMS  
V. Khachatryan *et al.* [CMS Collaboration], JINST **11** (2016) no.01, P01019.
- Search for a very light NMSSM Higgs boson produced in decays of the 125 GeV scalar boson and decaying into  $\tau$  leptons in pp collisions at  $\sqrt{s} = 8$  TeV  
V. Khachatryan *et al.* [CMS Collaboration], JHEP **1601** (2016) 079.
- Measurement of the top quark pair production cross section in proton-proton collisions at  $\sqrt{s} = 13$  TeV  
V. Khachatryan *et al.* [CMS Collaboration], Phys. Rev. Lett. **116** (2016) no.5, 052002.
- Search for a light charged Higgs boson decaying to  $c\bar{s}$  in pp collisions at  $\sqrt{s} = 8$  TeV  
V. Khachatryan *et al.* [CMS Collaboration], JHEP **1512** (2015) 178.
- Transverse momentum spectra of inclusive b jets in pPb collisions at  $\sqrt{s_{NN}} = 5.02$  TeV  
V. Khachatryan *et al.* [CMS Collaboration], Phys. Lett. B **754** (2016) 59.
- Searches for a heavy scalar boson H decaying to a pair of 125 GeV Higgs bosons hh or for a heavy pseudoscalar boson A decaying to Zh, in the final states with  $h \rightarrow \tau\tau$   
V. Khachatryan *et al.* [CMS Collaboration], Phys. Lett. B **755** (2016) 217.
- Observation of top quark pairs produced in association with a vector boson in pp collisions at  $\sqrt{s} = 8$  TeV  
V. Khachatryan *et al.* [CMS Collaboration], JHEP **1601** (2016) 096.
- Measurement of transverse momentum relative to dijet systems in PbPb and pp collisions at  $\sqrt{s_{NN}} = 2.76$  TeV  
V. Khachatryan *et al.* [CMS Collaboration], JHEP **1601** (2016) 006.
- Search for the production of an excited bottom quark decaying to  $tW$  in proton-proton collisions at  $\sqrt{s} = 8$  TeV  
V. Khachatryan *et al.* [CMS Collaboration], JHEP **1601** (2016) 166.
- Measurement of the  $t\bar{t}$  production cross section in the all-jets final state in pp collisions at  $\sqrt{s} = 8$  TeV  
V. Khachatryan *et al.* [CMS Collaboration], Eur. Phys. J. C **76** (2016) no.3, 128.
- Search for  $W' \rightarrow tb$  in proton-proton collisions at  $\sqrt{s} = 8$  TeV  
V. Khachatryan *et al.* [CMS Collaboration], JHEP **1602** (2016) 122.
- Search for vector-like charge 2/3 T quarks in proton-proton collisions at  $\sqrt{s} = 8$  TeV  
V. Khachatryan *et al.* [CMS Collaboration], Phys. Rev. D **93** (2016) no.1, 012003.
- Measurement of the top quark mass using proton-proton data at  $\sqrt{s} = 7$  and 8 TeV  
V. Khachatryan *et al.* [CMS Collaboration], Phys. Rev. D **93** (2016) no.7, 072004.
- Search for single production of scalar leptoquarks in proton-proton collisions at  $\sqrt{s} = 8$  TeV  
V. Khachatryan *et al.* [CMS Collaboration], Phys. Rev. D **93** (2016) no.3, 032005.
- Search for pair production of first and second generation leptoquarks in proton-proton collisions at  $\sqrt{s} = 8$  TeV  
V. Khachatryan *et al.* [CMS Collaboration], Phys. Rev. D **93** (2016) no.3, 032004.
- Measurement of differential cross sections for Higgs boson production in the diphoton decay channel in pp collisions at  $\sqrt{s} = 8$  TeV  
V. Khachatryan *et al.* [CMS Collaboration], Eur. Phys. J. C **76** (2016) no.1, 13.
- Search for a charged Higgs boson in pp collisions at  $\sqrt{s} = 8$  TeV  
V. Khachatryan *et al.* [CMS Collaboration], JHEP **1511** (2015) 018.
- Search for supersymmetry in the vector-boson fusion topology in proton-proton collisions at  $\sqrt{s} = 8$  TeV  
V. Khachatryan *et al.* [CMS Collaboration], JHEP **1511** (2015) 189.
- Study of B Meson Production in p+Pb Collisions at  $\sqrt{s_{NN}} = 5.02$  TeV Using Exclusive Hadronic Decays  
V. Khachatryan *et al.* [CMS Collaboration], Phys. Rev. Lett. **116** (2016) no.3, 032301.

- Search for  $W'$  decaying to tau lepton and neutrino in proton-proton collisions at  $\sqrt{s} = 8$  TeV  
V. Khachatryan *et al.* [CMS Collaboration], Phys. Lett. B **755** (2016) 196.
- Measurement of the charge asymmetry in top quark pair production in pp collisions at  $\sqrt{s} = 8$  TeV using a template method  
V. Khachatryan *et al.* [CMS Collaboration], Phys. Rev. D **93** (2016) no.3, 034014.
- Search for neutral MSSM Higgs bosons decaying to  $\mu^+\mu^-$  in pp collisions at  $\sqrt{s} = 7$  and 8 TeV  
V. Khachatryan *et al.* [CMS Collaboration], Phys. Lett. B **752** (2016) 221.
- Search for supersymmetry in events with a photon, a lepton, and missing transverse momentum in pp collisions at  $\sqrt{s} = 8$  TeV  
V. Khachatryan *et al.* [CMS Collaboration], Phys. Lett. B **757** (2016) 6.
- Angular analysis of the decay  $B^0 \rightarrow K^{*0}\mu^+\mu^-$  from pp collisions at  $\sqrt{s} = 8$  TeV  
V. Khachatryan *et al.* [CMS Collaboration], Phys. Lett. B **753** (2016) 424.
- Measurement of the CP-violating weak phase  $\phi_s$  and the decay width difference  $\Delta\Gamma_s$  using the  $B_s^0 \rightarrow J/\psi\phi(1020)$  decay channel in pp collisions at  $\sqrt{s} = 8$  TeV  
V. Khachatryan *et al.* [CMS Collaboration], Phys. Lett. B **757** (2016) 97.
- Measurement of the underlying event activity using charged-particle jets in proton-proton collisions at  $\sqrt{s} = 2.76$  TeV  
V. Khachatryan *et al.* [CMS Collaboration], JHEP **1509** (2015) 137.
- Limits on the Higgs boson lifetime and width from its decay to four charged leptons  
V. Khachatryan *et al.* [CMS Collaboration], Phys. Rev. D **92** (2015) no.7, 072010.
- Pseudorapidity distribution of charged hadrons in proton-proton collisions at  $\sqrt{s} = 13$  TeV  
V. Khachatryan *et al.* [CMS Collaboration], Phys. Lett. B **751** (2015) 143.
- Inclusive and differential measurements of the  $t\bar{t}$  charge asymmetry in pp collisions at  $\sqrt{s} = 8$  TeV  
V. Khachatryan *et al.* [CMS Collaboration], Phys. Lett. B **757** (2016) 154.
- Search for a Higgs boson decaying into  $\gamma^*\gamma \rightarrow \ell\ell\gamma$  with low dilepton mass in pp collisions at  $\sqrt{s} = 8$  TeV  
V. Khachatryan *et al.* [CMS Collaboration], Phys. Lett. B **753** (2016) 341.
- Search for supersymmetry with photons in pp collisions at  $\sqrt{s} = 8$  TeV  
V. Khachatryan *et al.* [CMS Collaboration], Phys. Rev. D **92** (2015) no.7, 072006.
- Search for exotic decays of a Higgs boson into undetectable particles and one or more photons  
V. Khachatryan *et al.* [CMS Collaboration], Phys. Lett. B **753** (2016) 363.
- Production of leading charged particles and leading charged-particle jets at small transverse momenta in pp collisions at  $\sqrt{s} = 8$  TeV  
V. Khachatryan *et al.* [CMS Collaboration], Phys. Rev. D **92** (2015) no.11, 112001.
- Search for neutral MSSM Higgs bosons decaying into a pair of bottom quarks  
V. Khachatryan *et al.* [CMS Collaboration], JHEP **1511** (2015) 071.
- Search for resonant  $t\bar{t}$  production in proton-proton collisions at  $\sqrt{s} = 8$  TeV  
V. Khachatryan *et al.* [CMS Collaboration], Phys. Rev. D **93** (2016) no.1, 012001.
- Search for diphoton resonances in the mass range from 150 to 850 GeV in pp collisions at  $\sqrt{s} = 8$  TeV  
V. Khachatryan *et al.* [CMS Collaboration], Phys. Lett. B **750** (2015) 494.
- Search for a massive resonance decaying into a Higgs boson and a W or Z boson in hadronic final states in proton-proton collisions at  $\sqrt{s} = 8$  TeV  
V. Khachatryan *et al.* [CMS Collaboration], JHEP **1602** (2016) 145.
- Search for the standard model Higgs boson produced through vector boson fusion and decaying to  $b\bar{b}$   
V. Khachatryan *et al.* [CMS Collaboration], Phys. Rev. D **92** (2015) no.3, 032008.

- A search for pair production of new light bosons decaying into muons  
V. Khachatryan *et al.* [CMS Collaboration], Phys. Lett. B **752** (2016) 146.
- Search for neutral color-octet weak-triplet scalar particles in proton-proton collisions at  $\sqrt{s} = 8$  TeV  
V. Khachatryan *et al.* [CMS Collaboration], JHEP **1509** (2015) 201.
- Comparison of the  $Z/\gamma^* + \text{jets}$  to  $\gamma + \text{jets}$  cross sections in pp collisions at  $\sqrt{s} = 8$  TeV  
V. Khachatryan *et al.* [CMS Collaboration], JHEP **1510** (2015) 128 Erratum: [JHEP **1604** (2016) 010].
- Measurement of the differential cross section for top quark pair production in pp collisions at  $\sqrt{s} = 8$  TeV  
V. Khachatryan *et al.* [CMS Collaboration], Eur. Phys. J. C **75** (2015) no.11, 542.
- Impact of low-dose electron irradiation on  $n^+p$  silicon strip sensors  
W. Adam *et al.* [CMS Tracker Group Collaboration], Nucl. Instrum. Meth. A **803** (2015) 100.
- Trapping in Irradiated p-on-n Silicon Sensors at Fluences Anticipated at the HL-LHC Outer Tracker  
W. Adam *et al.* [CMS Tracker Group Collaboration], JINST **11** (2016) no.04, P04023.
- Search for a pseudoscalar boson decaying into a Z boson and the 125 GeV Higgs boson in  $\ell^+ \ell^- b \bar{b}$  final states  
V. Khachatryan *et al.* [CMS Collaboration], Phys. Lett. B **748** (2015) 221.
- Angular coefficients of Z bosons produced in pp collisions at  $\sqrt{s} = 8$  TeV and decaying to  $\mu^+ \mu^-$  as a function of transverse momentum and rapidity  
V. Khachatryan *et al.* [CMS Collaboration], Phys. Lett. B **750** (2015) 154.
- Measurement of the Z boson differential cross section in transverse momentum and rapidity in proton-proton collisions at 8 TeV  
V. Khachatryan *et al.* [CMS Collaboration], Phys. Lett. B **749** (2015) 187.
- Search for the production of dark matter in association with top-quark pairs in the single-lepton final state in proton-proton collisions at  $\sqrt{s} = 8$  TeV  
V. Khachatryan *et al.* [CMS Collaboration], JHEP **1506** (2015) 121.
- Search for a Higgs Boson in the Mass Range from 145 to 1000 GeV Decaying to a Pair of W or Z Bosons  
V. Khachatryan *et al.* [CMS Collaboration], JHEP **1510** (2015) 144.
- Search for Third-Generation Scalar Leptoquarks in the  $\tau\tau$  Channel in Proton-Proton Collisions at  $\sqrt{s} = 8$  TeV  
V. Khachatryan *et al.* [CMS Collaboration], JHEP **1507** (2015) 042.
- Measurement of diffraction dissociation cross sections in pp collisions at  $\sqrt{s} = 7$  TeV  
V. Khachatryan *et al.* [CMS Collaboration], Phys. Rev. D **92** (2015) no.1, 012003.
- Searches for third-generation squark production in fully hadronic final states in proton-proton collisions at  $\sqrt{s} = 8$  TeV  
V. Khachatryan *et al.* [CMS Collaboration], JHEP **1506** (2015) 116.
- Combined Measurement of the Higgs Boson Mass in  $pp$  Collisions at  $\sqrt{s} = 7$  and 8 TeV with the ATLAS and CMS Experiments  
G. Aad *et al.* [ATLAS and CMS Collaborations], Phys. Rev. Lett. **114** (2015) 191803.
- Study of W boson production in pPb collisions at  $\sqrt{s_{NN}} = 5.02$  TeV  
V. Khachatryan *et al.* [CMS Collaboration], Phys. Lett. B **750** (2015) 565.
- Measurements of the  $ZZ$  production cross sections in the  $2l2\nu$  channel in proton-proton collisions at  $\sqrt{s} = 7$  and 8 TeV and combined constraints on triple gauge couplings  
V. Khachatryan *et al.* [CMS Collaboration], Eur. Phys. J. C **75** (2015) no.10, 511.
- Search for resonant pair production of Higgs bosons decaying to two bottom quark-antiquark pairs in proton-proton collisions at 8 TeV  
V. Khachatryan *et al.* [CMS Collaboration], Phys. Lett. B **749** (2015) 560.



- Search for vector-like T quarks decaying to top quarks and Higgs bosons in the all-hadronic channel using jet substructure  
V. Khachatryan *et al.* [CMS Collaboration], JHEP **1506** (2015) 080.
- Evidence for transverse momentum and pseudorapidity dependent event plane fluctuations in PbPb and pPb collisions  
V. Khachatryan *et al.* [CMS Collaboration], Phys. Rev. C **92** (2015) no.3, 034911.
- Study of Final-State Radiation in Decays of Z Bosons Produced in *pp* Collisions at 7 TeV  
V. Khachatryan *et al.* [CMS Collaboration], Phys. Rev. D **91** (2015) no.9, 092012.
- Search for Lepton-Flavour-Violating Decays of the Higgs Boson  
V. Khachatryan *et al.* [CMS Collaboration], Phys. Lett. B **749** (2015) 337.
- Nuclear Effects on the Transverse Momentum Spectra of Charged Particles in pPb Collisions at  $\sqrt{s_{NN}} = 5.02$  TeV  
V. Khachatryan *et al.* [CMS Collaboration], Eur. Phys. J. C **75** (2015) no.5, 237.
- Evidence for Collective Multiparticle Correlations in p-Pb Collisions  
V. Khachatryan *et al.* [CMS Collaboration], Phys. Rev. Lett. **115** (2015) no.1, 012301.
- Search for Narrow High-Mass Resonances in Proton-Proton Collisions at  $\sqrt{s} = 8$  TeV Decaying to a Z and a Higgs Boson  
V. Khachatryan *et al.* [CMS Collaboration], Phys. Lett. B **748** (2015) 255.
- Distributions of Topological Observables in Inclusive Three- and Four-Jet Events in *pp* Collisions at  $\sqrt{s} = 7$  TeV  
V. Khachatryan *et al.* [CMS Collaboration], Eur. Phys. J. C **75** (2015) no.7, 302.
- Searches for Supersymmetry using the  $M_{T2}$  Variable in Hadronic Events Produced in *pp* Collisions at 8 TeV  
V. Khachatryan *et al.* [CMS Collaboration], JHEP **1505** (2015) 078.
- Measurement of  $J/\psi$  and  $Y(2S)$  Prompt Double-Differential Cross Sections in *pp* Collisions at  $\sqrt{s} = 7$  TeV  
V. Khachatryan *et al.* [CMS Collaboration], Phys. Rev. Lett. **114** (2015) no.19, 191802.
- Performance of Photon Reconstruction and Identification with the CMS Detector in Proton-Proton Collisions at  $\sqrt{s} = 8$  TeV  
V. Khachatryan *et al.* [CMS Collaboration], JINST **10** (2015) no.08, P08010.
- Performance of Electron Reconstruction and Selection with the CMS Detector in Proton-Proton Collisions at  $\sqrt{s} = 8$  TeV  
V. Khachatryan *et al.* [CMS Collaboration], JINST **10** (2015) no.06, P06005.
- Constraints on the pMSSM, AMSB model and on other models from the search for long-lived charged particles in proton-proton collisions at  $\sqrt{s} = 8$  TeV  
V. Khachatryan *et al.* [CMS Collaboration], Eur. Phys. J. C **75** (2015) no.7, 325.
- Search for a Standard Model Higgs Boson Produced in Association with a Top-Quark Pair and Decaying to Bottom Quarks Using a Matrix Element Method  
V. Khachatryan *et al.* [CMS Collaboration], Eur. Phys. J. C **75** (2015) no.6, 251.
- Measurements of the  $Y(1S)$ ,  $Y(2S)$ , and  $Y(3S)$  differential cross sections in *pp* collisions at  $\sqrt{s} = 7$  TeV  
V. Khachatryan *et al.* [CMS Collaboration], Phys. Lett. B **749** (2015) 14.
- Measurement of the ratio  $B(B_s^0 \rightarrow J/\psi f_0(980))/B(B_s^0 \rightarrow J/\psi \phi(1020))$  in *pp* collisions at  $\sqrt{s} = 7$  TeV  
V. Khachatryan *et al.* [CMS Collaboration], Phys. Lett. B **756** (2016) 84.
- Search for heavy Majorana neutrinos in  $\mu^\pm \mu^\pm +$  jets events in proton-proton collisions at  $\sqrt{s} = 8$  TeV  
V. Khachatryan *et al.* [CMS Collaboration], Phys. Lett. B **748** (2015) 144.
- Precise determination of the mass of the Higgs boson and tests of compatibility of its couplings with the standard model predictions using proton collisions at 7 and 8 TeV  
V. Khachatryan *et al.* [CMS Collaboration], Eur. Phys. J. C **75** (2015) no.5, 212.
- Search for pair-produced resonances decaying to jet pairs in proton-proton collisions at  $\sqrt{s} = 8$  TeV  
V. Khachatryan *et al.* [CMS Collaboration], Phys. Lett. B **747** (2015) 98.

- Measurement of the cross section ratio  $\sigma_{\text{tt}\bar{b}\bar{b}}/\sigma_{\text{tt}\bar{t}\bar{t}}$  in pp collisions at  $\sqrt{s} = 8$  TeV  
V. Khachatryan *et al.* [CMS Collaboration], Phys. Lett. B **746** (2015) 132.
- Observation of the rare  $B_s^0 \rightarrow \mu^+ \mu^-$  decay from the combined analysis of CMS and LHCb data  
V. Khachatryan *et al.* [CMS and LHCb Collaborations], Nature **522** (2015) 68.
- Constraints on the spin-parity and anomalous HVV couplings of the Higgs boson in proton collisions at 7 and 8 TeV  
V. Khachatryan *et al.* [CMS Collaboration], Phys. Rev. D **92** (2015) no.1, 012004.
- Search for quark contact interactions and extra spatial dimensions using dijet angular distributions in proton-proton collisions at  $\sqrt{s} = 8$  TeV  
V. Khachatryan *et al.* [CMS Collaboration], Phys. Lett. B **746** (2015) 79.
- Search for new phenomena in monophoton final states in proton-proton collisions at  $\sqrt{s} = 8$  TeV  
V. Khachatryan *et al.* [CMS Collaboration], Phys. Lett. B **755** (2016) 102.
- Constraints on parton distribution functions and extraction of the strong coupling constant from the inclusive jet cross section in pp collisions at  $\sqrt{s} = 7$  TeV  
V. Khachatryan *et al.* [CMS Collaboration], Eur. Phys. J. C **75** (2015) no.6, 288.
- Search for dark matter, extra dimensions, and unparticles in monojet events in proton-proton collisions at  $\sqrt{s} = 8$  TeV  
V. Khachatryan *et al.* [CMS Collaboration], Eur. Phys. J. C **75** (2015) no.5, 235.
- Search for physics beyond the standard model in final states with a lepton and missing transverse energy in proton-proton collisions at  $\sqrt{s} = 8$  TeV  
V. Khachatryan *et al.* [CMS Collaboration], Phys. Rev. D **91** (2015) no.9, 092005.
- 92 - Measurement of the  $pp \rightarrow ZZ$  production cross section and constraints on anomalous triple gauge couplings in four-lepton final states at  $\sqrt{s} = 8$  TeV  
V. Khachatryan *et al.* [CMS Collaboration], Phys. Lett. B **740** (2015) 250.

#### Oral presentations

- C. Lange: High- $p_T$  multi-jet final states at ATLAS and CMS at 13 TeV  
Rencontres de Moriond EW 2016, March 12-19, 2016, La Thuile, Italy.
- B. Kilminster: Secrets of the Universe Beyond the Higgs Boson  
Zurich Physics Colloquium, February 2, 2016, ETH Zurich, Switzerland.
- T. Årrestad: Search for heavy resonances in the  $W/Z$ -tagged dijet mass spectrum  
CMS EXOTICA Workshop, November 12-14, 2015, Venice, Italy.
- J. Ngadiuba: Resonant di-boson searches in the semi-leptonic final state  
CMS EXOTICA Workshop, November 12-14, 2015, Venice, Italy.
- T. Årrestad: Search for heavy resonances in the  $W/Z$ -tagged dijet mass spectrum at CMS  
European School High Energy Physics 2015, September 2-15, 2015, Bansko, Bulgaria.
- C. Galloni: Search for heavy resonances in the  $X \rightarrow HH \rightarrow \tau\tau bb$  final state  
European School High Energy Physics 2015, September 2-15, 2015, Bansko, Bulgaria.
- D. Salerno: Search for standard model  $\text{ttH}(\text{bb})$  production in the all hadronic final state using the Matrix Element Method  
European School High Energy Physics 2015, September 2-15, 2015, Bansko, Bulgaria.
- A. De Cosa: Dark Matter at the LHC  
LHCP 2015, August 31 - September 5, 2015, Saint Petersburg, Russia.
- G. Rauco: Search for the standard model Higgs boson produced by vector boson fusion and decaying to bottom quarks  
LHCP 2015, August 31 - September 5, 2015, Saint Petersburg, Russia.
- T. Årrestad: Search for heavy resonances in the  $W/Z$ -tagged dijet mass spectrum at CMS  
PhD Seminar, August 27, 2015, PSI, Villigen, Switzerland.

- C. Galloni: Search for massive resonances decaying into boson pairs in the  $\tau\tau qq$  final state at CMS  
PhD Seminar, August 27, 2015, PSI, Villigen, Switzerland.
- D. Pinna: Dark matter produced in association with top quark pairs  
PhD Seminar, August 27, 2015, PSI, Villigen, Switzerland.
- D. Salerno: All hadronic  $t\bar{t}H(bb)$  analysis using the Matrix Element Method  
PhD Seminar, August 27, 2015, PSI, Villigen, Switzerland.
- J. Ngadiuba: CMS Pixel Phase I Upgrade: System Test at UZH  
PhD Seminar, August 27, 2015, PSI, Villigen, Switzerland.
- A. Hinzmann: New results from CMS on the search for  $VV/VH/HH$  resonances in Run 1  
BOOST2015, August 11, 2015, University of Chicago, Chicago, IL, USA.
- A. Hinzmann: Higgs as a probe for exotic new physics  
DESY Physics Seminar, July 14, 2015, DESY, Hamburg, Germany.
- L. Caminada: Higgs production in association with top quarks at CMS  
QCD15, June 29-July 3, 2015, Montpellier, France.
- B. Kilminster: Searching beyond SUSY with CMS and ATLAS  
Gordon Research Conference on Prospects of Particle Physics at the 13TeV Large Hadron Collider, June 10, 2015, Hong Kong University of Science and Technology, Hong Kong.
- J. Ngadiuba: Status of the CMS Pixel System Test at UZH  
CMS Pixel Workshop, June 8-10, 2015, Visegrad, Hungary.
- D. Pinna: System Tests at Zurich University, Power Aspects  
CMS Pixel Workshop, June 8-10, 2015, Visegrad, Hungary.
- L. Caminada: Phase 1 Upgrade of the CMS Pixel Detector  
VERTEX 2015, June 1-5, 2015, Santa Fe, NM, USA.
- C. Lange: CMS inner detector: the Run 1 to Run 2 transition, and first experience of Run 2  
VERTEX 2015, June 1-5, 2015, Santa Fe, NM, USA.
- A. De Cosa: LHC results for dark matter from ATLAS and CMS  
CIPANP 2015, May 23, 2015, Vail, CO, USA.
- A. Hinzmann: Higgs as a probe for exotic new physics  
Particle and Astroparticle Seminar, May 20, 2015, University of Zurich, Zurich, Switzerland.
- J. Ngadiuba: Search for heavy resonances in diboson final states with the CMS detector at LHC  
Phenomenology Symposium 2015, May 4-6, 2015, University of Pittsburgh, Pittsburgh, PA, USA.
- F. Canelli: Searches beyond the Standard Model using top quarks  
Top at 20, April 10, 2015, Fermilab, Chicago, IL, USA.
- C. Galloni: Top Properties at Tevatron  
Top at 20, April 10, 2015, Fermilab, Chicago, IL, USA.

### 19.1.11 LHCb

#### Articles

- Study of  $\psi(2S)$  production and cold nuclear matter effects in pPb collisions at  $\sqrt{s_{NN}} = 5$  TeV  
LHCb-Collaboration, R. Aaij *et al.*, JHEP **1603** (2016) 133.
- Study of  $D_{s1}^{(*)+}$  mesons decaying to  $D^+ K_S^0$  and  $D^{*0} K^+$  final states  
LHCb-Collaboration, R. Aaij *et al.*, JHEP **1602** (2016) 133.

- Angular analysis of the  $B^0 \rightarrow K^{*0} \mu^+ \mu^-$  decay using  $3 \text{ fb}^{-1}$  of integrated luminosity  
LHCb-Collaboration, R. Aaij *et al.*, JHEP **1602** (2016) 104.
- First observation of the rare  $B^+ \rightarrow D^+ K^+ \pi^-$  decay  
LHCb-Collaboration, R. Aaij *et al.*, Phys. Rev. D **93** (2016) no.5, 051101.
- Search for the lepton-flavour violating decay  $D^0 \rightarrow e^\pm \mu^\mp$   
LHCb-Collaboration, R. Aaij *et al.*, Phys. Lett. B **754** (2016) 167.
- Measurement of forward W and Z boson production in  $pp$  collisions at  $\sqrt{s} = 8 \text{ TeV}$   
LHCb-Collaboration, R. Aaij *et al.*, JHEP **1601** (2016) 155.
- Search for the rare decays  $B^0 \rightarrow J/\psi \gamma$  and  $B_s^0 \rightarrow J/\psi \gamma$   
LHCb-Collaboration, R. Aaij *et al.*, Phys. Rev. D **92** (2015) no.11, 112002.
- Evidence for the strangeness-changing weak decay  $\Xi_b^- \rightarrow \Lambda_b^0 \pi^-$   
LHCb-Collaboration, R. Aaij *et al.*, Phys. Rev. Lett. **115** (2015) no.24, 241801.
- Model-independent confirmation of the  $Z(4430)^-$  state  
LHCb-Collaboration, R. Aaij *et al.*, Phys. Rev. D **92** (2015) no.11, 112009 [Phys. Rev. D **92** (2015) 112009].
- Measurements of prompt charm production cross-sections in  $pp$  collisions at  $\sqrt{s} = 13 \text{ TeV}$   
LHCb-Collaboration, R. Aaij *et al.*, JHEP **1603** (2016) 159.
- Model-independent measurement of mixing parameters in  $D^0 \rightarrow K_S^0 \pi^+ \pi^-$  decays  
LHCb-Collaboration, R. Aaij *et al.*, JHEP **1604** (2016) 033.
- Measurement of the forward-backward asymmetry in  $Z/\gamma^* \rightarrow \mu^+ \mu^-$  decays and determination of the effective weak mixing angle  
LHCb-Collaboration, R. Aaij *et al.*, JHEP **1511** (2015) 190.
- Studies of the resonance structure in  $D^0 \rightarrow K_S^0 K^\pm \pi^\mp$  decays  
LHCb-Collaboration, R. Aaij *et al.*, Phys. Rev. D **93** (2016) no.5, 052018.
- Forward production of Y mesons in  $pp$  collisions at  $\sqrt{s} = 7$  and  $8 \text{ TeV}$   
LHCb-Collaboration, R. Aaij *et al.*, JHEP **1511** (2015) 103.
- Measurement of forward  $J/\psi$  production cross-sections in  $pp$  collisions at  $\sqrt{s} = 13 \text{ TeV}$   
LHCb-Collaboration, R. Aaij *et al.*, JHEP **1510** (2015) 172.
- First measurement of the differential branching fraction and  $CP$  asymmetry of the  $B^\pm \rightarrow \pi^\pm \mu^+ \mu^-$  decay  
LHCb-Collaboration, R. Aaij *et al.*, JHEP **1510** (2015) 034.
- Measurement of  $CP$  violation parameters and polarisation fractions in  $B_s^0 \rightarrow J/\psi \bar{K}^{*0}$  decays  
LHCb-Collaboration, R. Aaij *et al.*, JHEP **1511** (2015) 082.
- Study of the production of  $\Lambda_b^0$  and  $\bar{B}^0$  hadrons in  $pp$  collisions and first measurement of the  $\Lambda_b^0 \rightarrow J/\psi p K^-$  branching fraction  
LHCb-Collaboration, R. Aaij *et al.*, Chin. Phys. C **40** (2016) no.1, 011001.
- Measurement of the time-integrated  $CP$  asymmetry in  $D^0 \rightarrow K_S^0 K_S^0$  decays  
LHCb-Collaboration, R. Aaij *et al.*, JHEP **1510** (2015) 055.
- Search for hidden-sector bosons in  $B^0 \rightarrow K^{*0} \mu^+ \mu^-$  decays  
LHCb-Collaboration, R. Aaij *et al.*, Phys. Rev. Lett. **115** (2015) no.16, 161802.
- Measurement of the  $B_s^0 \rightarrow \phi \phi$  branching fraction and search for the decay  $B^0 \rightarrow \phi \phi$   
LHCb-Collaboration, R. Aaij *et al.*, JHEP **1510** (2015) 053.
- $B$  flavour tagging using charm decays at the LHCb experiment  
LHCb-Collaboration, R. Aaij *et al.*, JINST **10** (2015) no.10, P10005.

- Till Moritz Karbach, Scientific Legacy  
LHCb-Collaboration, R. Aaij *et al.*, LHCb-PUB-2015-010, CERN-LHCb-PUB-2015-010.
- Measurement of the branching fraction ratio  $\mathcal{B}(B_c^+ \rightarrow \psi(2S)\pi^+)/\mathcal{B}(B_c^+ \rightarrow J/\psi\pi^+)$   
LHCb-Collaboration, R. Aaij *et al.*, Phys. Rev. D **92** (2015) no.7, 072007
- Observation of  $J/\Psi p$  Resonances Consistent with Pentaquark States in  $\Lambda_b^0 \rightarrow J/\Psi K^- p$  Decays  
LHCb-Collaboration, R. Aaij *et al.*, Phys. Rev. Lett. **115** (2015) 072001.
- Search for long-lived heavy charged particles using a ring imaging Cherenkov technique at LHCb  
LHCb-Collaboration, R. Aaij *et al.*, Eur. Phys. J. C **75** (2015) no.12, 595.
- Angular analysis and differential branching fraction of the decay  $B_s^0 \rightarrow \phi\mu^+\mu^-$   
LHCb-Collaboration, R. Aaij *et al.*, JHEP **1509** (2015) 179.
- First observation of the decay  $B_s^0 \rightarrow K(892)^0 K(892)^0$  at LHCb  
LHCb-Collaboration, R. Aaij *et al.*, JHEP **1601** (2016) 012.
- Measurement of the ratio of branching fractions  $\mathcal{B}(\bar{B}^0 \rightarrow D^{*+}\tau^-\bar{\nu}_\tau)/\mathcal{B}(\bar{B}^0 \rightarrow D^{*+}\mu^-\bar{\nu}_\mu)$   
LHCb-Collaboration, R. Aaij *et al.*, Phys. Rev. Lett. **115** (2015) no.11, 111803  
Addendum: [Phys. Rev. Lett. **115** (2015) no.15, 159901].
- First observation of top quark production in the forward region  
LHCb-Collaboration, R. Aaij *et al.*, Phys. Rev. Lett. **115** (2015) no.11, 11200.
- Measurement of the exclusive  $\Upsilon$  production cross-section in pp collisions at  $\sqrt{s} = 7$  TeV and 8 TeV  
LHCb-Collaboration, R. Aaij *et al.*, JHEP **1509** (2015) 084.
- Study of  $B^- \rightarrow DK^-\pi^+\pi^-$  and  $B^- \rightarrow D\pi^-\pi^+\pi^-$  decays and determination of the CKM angle  $\gamma$   
LHCb-Collaboration, R. Aaij *et al.*, Phys. Rev. D **92** (2015) no.11, 112005.
- Measurement of the forward  $Z$  boson production cross-section in  $pp$  collisions at  $\sqrt{s} = 7$  TeV  
LHCb-Collaboration, R. Aaij *et al.*, JHEP **1508** (2015) 039.
- Study of  $W$  boson production in association with beauty and charm  
LHCb-Collaboration, R. Aaij *et al.*, Phys. Rev. D **92** (2015) no.5, 052001.
- Search for the  $\Lambda_b^0 \rightarrow \Lambda\eta'$  and  $\Lambda_b^0 \rightarrow \Lambda\eta$  decays with the LHCb detector  
LHCb-Collaboration, R. Aaij *et al.*, JHEP **1509** (2015) 006.
- Dalitz plot analysis of  $B^0 \rightarrow \bar{D}^0\pi^+\pi^-$  decays  
LHCb-Collaboration, R. Aaij *et al.*, Phys. Rev. D **92** (2015) no.3, 032002.
- Search for the decay  $B_s^0 \rightarrow \bar{D}^0 f_0(980)$   
LHCb-Collaboration, R. Aaij *et al.*, JHEP **1508** (2015) 005.
- Amplitude analysis of  $B^0 \rightarrow \bar{D}^0 K^+\pi^-$  decays  
LHCb-Collaboration, R. Aaij *et al.*, Phys. Rev. D **92** (2015) no.1, 012012.
- Identification of beauty and charm quark jets at LHCb  
LHCb-Collaboration, R. Aaij *et al.*, JINST **10** (2015) no.06, P06013.
- Quantum numbers of the  $X(3872)$  state and orbital angular momentum in its  $\rho^0 J\psi$  decay  
LHCb-Collaboration, R. Aaij *et al.*, Phys. Rev. D **92** (2015) no.1, 011102.
- A study of  $CP$  violation in  $B^\mp \rightarrow Dh^\mp$  ( $h = K, \pi$ ) with the modes  $D \rightarrow K^\mp \pi^\pm \pi^0$ ,  $D \rightarrow \pi^+ \pi^- \pi^0$  and  $D \rightarrow K^+ K^- \pi^0$   
LHCb-Collaboration, R. Aaij *et al.*, Phys. Rev. D **91** (2015) no.11, 112014.
- Determination of the quark coupling strength  $|V_{ub}|$  using baryonic decays  
LHCb-Collaboration, R. Aaij *et al.*, Nature Phys. **11** (2015) 743.

- First observation and measurement of the branching fraction for the decay  $B_s^0 \rightarrow D_s^{*\mp} K^\pm$   
LHCb-Collaboration, R. Aaij *et al.*, JHEP **1506** (2015) 130.
- 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.*, Phys. Lett. B **747** (2015) 468.
- Observation of the  $B_s^0 \rightarrow \eta' \eta'$  decay  
LHCb-Collaboration, R. Aaij *et al.*, Phys. Rev. Lett. **115** (2015) no.5, 051801.
- Differential branching fraction and angular analysis of  $\Lambda_b^0 \rightarrow \Lambda \mu^+ \mu^-$  decays  
LHCb-Collaboration, R. Aaij *et al.*, JHEP **1506** (2015) 115.
- Observation of the decay  $\bar{B}_s^0 \rightarrow \psi(2S) K^+ \pi^-$   
LHCb-Collaboration, R. Aaij *et al.*, Phys. Lett. B **747** (2015) 484.
- Measurement of  $CP$  violation in  $B^0 \rightarrow J/\psi K_S^0$  decays  
LHCb-Collaboration, R. Aaij *et al.*, Phys. Rev. Lett. **115** (2015) no.3, 031601.
- Measurement of the time-dependent  $CP$  asymmetries in  $B_s^0 \rightarrow J/\psi K_S^0$   
LHCb-Collaboration, R. Aaij *et al.*, JHEP **1506** (2015) 131.
- Measurement of  $CP$  asymmetries and polarisation fractions in  $B_s^0 \rightarrow K^{*0} \bar{K}^{*0}$  decays  
LHCb-Collaboration, R. Aaij *et al.*, JHEP **1507** (2015) 166.
- First observation and amplitude analysis of the  $B^- \rightarrow D^+ K^- \pi^-$  decay  
LHCb-Collaboration, R. Aaij *et al.*, Phys. Rev. D **91** (2015) no.9, 092002.
- Measurement of forward  $Z \rightarrow e^+ e^-$  production at  $\sqrt{s} = 8$  TeV  
LHCb-Collaboration, R. Aaij *et al.*, JHEP **1505** (2015) 109.
- Precise measurements of the properties of the  $B_1(5721)^{0,+}$  and  $B_2^*(5747)^{0,+}$  states and observation of  $B^{+0} \pi^- \pi^+$  mass structures  
LHCb-Collaboration, R. Aaij *et al.*, JHEP **1504** (2015) 024.
- Measurement of indirect  $CP$  asymmetries in  $D^0 \rightarrow K^- K^+$  and  $D^0 \rightarrow \pi^- \pi^+$  decays using semileptonic  $B$  decays  
LHCb-Collaboration, R. Aaij *et al.*, JHEP **1504** (2015) 043.
- Angular analysis of the  $B^0 \rightarrow K^{*0} e^+ e^-$  decay in the low- $q^2$  region  
LHCb-Collaboration, R. Aaij *et al.*, JHEP **1504** (2015) 064.
- Determination of the branching fractions of  $B_S^0 \rightarrow DS^\pm K^\pm$  and  $B^0 \rightarrow D_S K^+$   
LHCb-Collaboration, R. Aaij *et al.*, JHEP **1505** (2015) 019.
- Search for long-lived particles decaying to jet pairs  
LHCb-Collaboration, R. Aaij *et al.*, Eur. Phys. J. C **75** (2015) no.4, 152.
- Observation of the rare  $B_s^0 \rightarrow \mu^+ \mu^-$  decay from the combined analysis of CMS and LHCb data  
CMS and LHCb Collaborations, V. Khachatryan *et al.*, Nature **522** (2015) 68.
- 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  $\eta_c(1S)$  production cross-section in proton-proton collisions via the decay  $\eta_c(1S) \rightarrow p \bar{p}$   
LHCb-Collaboration, R. Aaij *et al.*, Eur. Phys. J. C **75** (2015) no.7, 311.

#### Oral presentations

- Andreas Weiden: Direct  $CP$  violation searches using prompt 2-body charm decays at LHCb  
51st rencontres de Moriond, La Thuile, France, March 12 - 19 2016.
- Marcin Chrzaszcz: Anomalies in Flavour physics  
Miami 2015, Fort Lauderdale, Florida, USA, December 16 - 22 2015.

- Albert Bursche: Overview of LHCb results, including pentaquarks  
XV Mexican Workshop on Particles and Fields, Maxatlan, Mexico, November 2 - 6 2015.
- Rafael Silva Coutinho: Experimental overview of recent CPV results in hadronic charmless decays  
Implications of LHCb Measurements and Future Prospects, CERN, Geneva, Switzerland, November 4 2015.
- Andrea Mauri: Search for hidden-sector bosons in  $B_0 \rightarrow K^* \chi (\rightarrow \mu\mu)$  decays  
Implications of LHCb Measurements and Future Prospects, CERN, Geneva, Switzerland, November 4 2015.
- Marcin Chrzęszcz:  $B \rightarrow K^{(*)} \mu^+ \mu^-$ ,  $\Phi \rightarrow \mu^+ \mu^-$  and  $R$  measurements  
5th KEK Flavor Factory Workshop, Tokyo, Japan, October 26 - 27 2015.
- Marcin Chrzęszcz: Anomalies in Flavour Physics  
Particle Phenomenology, Particle Astrophysics and Cosmology Seminar, Cambridge, UK, October 15 2015.
- Barbara Storac: LHCb trigger and reconstruction optimization for Run II: real-time alignment and calibration, and the TURBO stream  
LHC Detector Seminar, CERN, Geneva, October 9 2015.
- Marcin Chrzęszcz: Extracting angular observables with the Method of Moments, Novel aspects of b to s transitions  
Marseille, France, October 5 - 7 2015.
- Olaf Steinkamp: The LHCb Upstream Tracker Project  
10th International Hiroshima Symposium on the Development and Application of Semiconductor Tracking Detectors, Xi'an, China, September 25 - 29 2015.
- Albert Bursche: Review of low  $x$  physics results at LHCb  
23rd Low  $x$  Meeting, Sandomierz, Poland, September 1 - 5 2015.
- Marcin Chrzęszcz: Searches for long-lived particles at LHCb  
SUSY 2015, Lake Tahoe, California, USA, August 23 - 29 2015.
- Marcin Chrzęszcz: Electroweak penguin decays to leptons and Radiative decays at LHCb  
SUSY 2015, Lake Tahoe, California, USA, August 23 - 29 2015.
- Andreas Weiden: Measurement of direct CP-violation at LHCb  
XXX. International Conference of Physics Students, Zagreb, Croatia, August 12 - 19 2015.
- Espen Bowen: Rare electroweak B decays at LHCb  
DPF 2015, Ann Arbor, Michigan, USA, August 4 - 8 2015.
- Espen Bowen: Novel real-time calibration and alignment and tracking performance for LHCb Run II  
DPF 2015, Ann Arbor, Michigan, USA, August 4 - 8 2015.
- Andrea Mauri: Search for Dark Sector particles at LHCb  
DPF 2015, Ann Arbor, Michigan, USA, August 4 - 8 2015.
- Andrea Mauri: Searches for low mass dark bosons  
EPS 2015, Vienna, Austria, July 22 - 29 2015.
- Marcin Chrzęszcz: Rare  $B$  decays  
QCD 2015, Montpellier, France, June 29 - July 3 2015.
- Marcin Chrzęszcz: Method of moments  
Rare  $B$  decays in experiment and theory, Edinburgh, UK, May 11 - 13 2015.
- Olaf Steinkamp: LHCb - Highlights from Run I  
Prospects for Run II and beyond, Particle Physics Seminar, Universität Bern, May 13 2015.
- Katharina Müller : LHCb results in proton-nucleus collisions at the LHC  
STARS 2015: 3rd Caribbean Symposium on Cosmology, Gravitation, Nuclear and Astroparticle Physics, Havana, Cuba, May 2015 10 - 16, proceedings published in Astronomische Nachrichten Volume 336, Issue 8 - 9 773.

- Marcin Chrzęszcz : Rare  $b$  and  $c$  decays at LHCb  
XXIII International Workshop on Deep-Inelastic Scattering and Related Subjects (DIS 2015),  
Dallas, USA, April 27 - May 1 2015.

## 19.2 Condensed matter

### 19.2.1 Superconductivity and Magnetism

#### Articles

- Resonant inelastic x-ray scattering study of the spin and charge excitations in the overdoped superconductor  $\text{La}_{1.77}\text{Sr}_{0.23}\text{CuO}_4$   
C. Monney, T. Schmitt, C. E. Matt, J. Mesot, V. N. Strocov, O. J. Lipscombe, S. M. Hayden, and J. Chang,  
*Physical Review B* **93**, 75103 (2016).
- The microscopic structure of charge density waves in underdoped  $\text{YBa}_2\text{Cu}_3\text{O}_{6.54}$  revealed by X-ray diffraction  
E. M. Forgan, E. Blackburn, A. T. Holmes, A. K. R. Briffa, J. Chang, L. Bouchenoire, S. D. Brown, Ruixing Liang,  
D. Bonn, W. N. Hardy, N. B. Christensen, M. V. Zimmermann, M. Hücker, S. M. Hayden,  
*Nature Communications* **6**, 10064 (2015).
- Electron scattering, charge order, and pseudogap physics in  $\text{La}_{1.6-x}\text{Nd}_{0.4}\text{Sr}_x\text{CuO}_4$  : An angle-resolved photoemission spectroscopy study  
C. E. Matt, C. G. Fatuzzo, Y. Sassa, M. Månsson, S. Fatale, V. Bitetta, X. Shi, S. Pailhès, M. H. Berntsen, T. Kurosawa,  
M. Oda, N. Momono, O. J. Liscombe, S. M. Hayden, J.-Q. Yan, J.-S. Zhou, J. B. Goodenough, S. Pyon, T. Takayama,  
H. Takagi, L. Patthey, A. Bendounan, E. Razzoli, M. Shi, N. C. Plumb, M. Radovic, M. Grioni, J. Mesot, O. Tjernberg  
and J. Chang,  
*Physical Review B* **92**, 134524 (2015).
- Spin-orbit-induced orbital excitations in  $\text{Sr}_2\text{RuO}_4$  and  $\text{Ca}_2\text{RuO}_4$  : A resonant inelastic x-ray scattering study  
C. G. Fatuzzo, M. Dantz, S. Fatale, P. Olalde-Velasco, N. E. Shaik, B. Dalla Piazza, S. Toth, J. Pellicari, R. Fittipaldi,  
A. Vecchione, N. Kikugawa, J. S. Brooks, H. M. Rønnow, M. Grioni, Ch. Rüegg, T. Schmitt, and J. Chang Fatuzzo,  
*Physical Review B* **91**, 155104 (2015).

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#### Invited lectures

- J. Chang: Shining light on high-temperature cuprate superconductors  
MaNEP Winter School, Saas Fee, January 18 2015.
- J. Chang: Recent results from PETRA III - Stacking charge density wave order in a high-temperature superconductor  
DESY Photon Science Users' Meeting, Hamburg, January 28-29 2016.
- J. Chang: Magnetic-field control of high-temperature superconductivity and charge order  
Bochum University Physics department seminar, January 11 2016.
- J. Chang: Charge order and superconductivity in the cuprates  
DIAMOND synchrotron department seminar, October 14 2015.
- J. Chang: Field-induced uni-directional charge-density-wave order in underdoped  $\text{YBa}_2\text{Cu}_3\text{O}_{7-x}$   
CIFAR Quantum Materials Meeting, Montreal, October 1-3 2015.
- J. Chang: Charge order, superconductivity and pseudogap physics in the cuprates  
DyProSo conference, Freising, September 13-17 2015.
- J. Chang: Charge ordering in  $\text{YBa}_2\text{Cu}_3\text{O}_y$  observed by hard x-ray diffraction  
M2S conference, Geneva, August 23-28 2015.
- J. Chang: Cuprate superconductivity and its competing orders  
Super stripe conference, Ischia, June 23-29 2015.



## 19.2.2 Phase transitions and superconducting photon detectors

### Articles

- Local detection efficiency of a NbN superconducting single photon detector explored by a scattering scanning near-field optical microscope  
Q. Wang, J.J. Renema, A. Engel, M.P. van Exter, and M.J.A. de Dood, *Optics Express* 23, 11, 24873-24887 (2015).
- Probing the pairing symmetry in the over-doped Fe-based superconductor  $\text{Ba}_{0.35}\text{Rb}_{0.65}\text{Fe}_2\text{As}_2$  as a function of hydrostatic pressure  
Z. Guguchia, R. Khasanov, Z. Bukowski, F. von Rohr, M. Medarde, P. K. Biswas, H. Luetkens, A. Amato, and E. Morenzoni, *Phys. Rev. B* 93, 094513.
- Tuning the critical magnetic field of the triplon Bose-Einstein condensation in  $\text{Ba}_{3-x}\text{Sr}_x\text{Cr}_2\text{O}_8$   
H. Grundmann, A. Sabitova, A. Schilling, F. von Rohr, T. Förster, and L. Peters, *New J. Phys.* 18 (2016) 033001.
- Cobalt complexes of tetradentate, bipyridine-based macrocycles: their structures, properties and photocatalytic proton reduction  
E. Joliat, S. Schnidrig, B. Probst, C. Bachmann, B. Spingler, K.K. Baldrige, F. von Rohr, A. Schilling and R. Alberto, *Dalton Trans.* 45 (2016), 1737-1745.
- Direct evidence for a pressure-induced nodal superconducting gap in the  $\text{Ba}_{0.65}\text{Rb}_{0.35}\text{Fe}_2\text{As}_2$  superconductor  
Z. Guguchia, A. Amato, J. Kang, H. Luetkens, P. K. Biswas, G. Prando, F. von Rohr, Z. Bukowski, A. Shengelaya, H. Keller, E. Morenzoni, R. M. Fernandes, R. Khasanov, *Nature Communications* 6, 8863 (2015).
- Local detection efficiency of a NbN superconducting single photon detector explored by a scattering scanning near-field optical microscope  
Q. Wang, J.J. Renema, A. Engel, M.P. van Exter, and M.J.A. de Dood, *Optics Express* 23, 11, 24873-24887 (2015).
- The crystal structure, electronic, and magnetic properties of  $\text{NaPd}_3\text{Ge}_2$   
M.N. Ali, F. von Rohr, C. Campana, A. Schilling, and R.J. Cava, *Materials Research Bulletin* 70 (2015), 673-677.
- Position-dependent local detection efficiency in a nanowire superconducting single-photon detector  
J.J. Renema, Q. Wang, R. Gaudio, I. Komen, K. op't Hoog, D. Sahin, A. Schilling, M.P. van Exter, A. Fiore, A. Engel, and M.J.A. de Dood, *Nano Letters* 15(7), 4145-4545 (2015).

### Conference contributions

- Q. Wang: Measuring the local response of a nanowire SSPD  
The International Workshop on Low Temperature Detectors (LTD), July 20th - 24th 2015, Grenoble, France.
- F. von Rohr: Superconductivity in the vicinity of structural and electronic phase boundaries  
12th International Conference on Materials Chemistry, 20-23 July 2015, University of York, UK.

## 19.2.3 Surface Physics

### Articles

- Sputter-induced reemergence of the topological surface state in  $\text{Bi}_2\text{Se}_3$   
R. Queiroz, G. Landolt, S. Muff, B. Slomski, T. Schmitt, V. N. Strocov, J. Mi, B. Brummerstedt Iversen, P. Hofmann, J. Osterwalder, A. P. Schnyder, J. H. Dil, *Phys. Rev. B* 93, 165409 (2016).
- Self-assembly of nanoscale lateral segregation profiles  
R. Stania, W. Heckel, I. Kalichava, C. Bernard, T. C. Kerscher, H. Y. Cun, P. R. Willmott, B. Schönfeld, J. Osterwalder, S. Müller, T. Greber, *Phys. Rev. B* 93, 161402 (2016).

- Circular dichroism in Cu resonant Auger electron diffraction  
F. Matsui, N. Maejima, H. Matsui, H. Nishikawa, H. Daimon, T. Matsushita, M. Muntwiler, R. Stania, T. Greber, Z. Phys. Chemie 230, 519 (2016).
- From porphyrins to pyrphyrins: adsorption study and metalation of a molecular catalyst on Au(111)  
G. Mette, D. Sutter, Y. Gurdal, S. Schnidrig, B. Probst, M. Iannuzzi, J. Hutter, R. Alberto, J. Osterwalder, Nanoscale 8, 7958 (2016).
- Microscopic origin of chiral shape induction in achiral crystals  
W. Xiao, K.-H. Ernst, K. Palotas, Y. Zhang, E. Bruyer, L. Peng, T. Greber, W. A. Hofer, L. T. Scott, R. Fasel, Nature Chemistry 8, 326 (2016).
- Resonant inelastic x-ray scattering study of the spin and charge excitations in the overdoped superconductor  $\text{La}_{1.77}\text{Sr}_{0.23}\text{Cu O}_4$   
C. Monney, T. Schmitt, C. E. Matt, J. Mesot, V. N. Strocov, O. J. Lipscombe, S. M. Hayden, J. Chang, Phys. Rev. B 93, 075103 (2016).
- Characterization of a cold cathode Penning ion source for the implantation of noble gases beneath 2D monolayers on metals: ions and neutrals  
H. Cun, A. Spescha, A. Schuler, M. Hengsberger, J. Osterwalder, T. Greber, J. Vac. Sci. Technol. A 34, 020602 (2016).
- Light-matter interaction at surfaces in the spatiotemporal limit of macroscopic models  
M. Lucchini, L. Castiglioni, L. Kasmi, P. Kliuiev, A. Ludwig, M. Greif, J. Osterwalder, M. Hengsberger, L. Gallmann, U. Keller, Phys. Rev. Lett. 115, 137401 (2015).
- 100 - Methane as a selective booster in the arc-discharge synthesis of endohedral fullerenes: selective synthesis of the single-molecular magnet  $\text{Dy}_2\text{TiC}_2@\text{C}_{80}$   
K. Junghans, C. Schlesier, A. Kostanyan, N. A. Samoylova, Q. Deng, M. Rosenkranz, S. Schiemenz, R. Westerström, T. Greber, B. Büchner, A. A. Popov, Angew. Chem. Int. Ed. 54, 1 (2015).
- Following the molecular motion of near-resonant excited CO on Pt(111): a simulated x-ray photoelectron diffraction study based on molecular dynamics calculations  
M. Greif, T. Nagy, M. Soloviov, L. Castiglioni, M. Hengsberger, M. Meuwly, J. Osterwalder, Struct. Dyn. 2, 035102 (2015).
- Energy-dependent photoemission delays from noble metal surfaces by attosecond interferometry  
R. Locher, L. Castiglioni, M. Lucchini, M. Greif, L. Gallmann, J. Osterwalder, M. Hengsberger, U. Keller, Optica 2, 405 (2015).

#### Contributed conference presentations

- A rhenium based photosensitizer on alumina films with variable thickness (poster)  
W.-D. Zabka, International Conference on Solar Fuels, Uppsala, Sweden, 26. 04. 15.
- How time-resolved photoemission reveals the origin of the charge density wave phase in  $\text{TiSe}_2$   
C. Monney, Lasers for Science Facility Users Meeting, Abingdon, UK, 28. 04. 15.
- Ultrafast recovery of the CDW phase in  $\text{TiSe}_2$  due to electron-hole scattering  
C. Monney, Ultrafast Surface Dynamics Conference (USD-9), Lake Biwa, Japan, 27. 05. 15.
- Photoemission dynamics studied by attosecond interferometry  
L. Castiglioni, Ultrafast Surface Dynamics Conference (USD-9), Lake Biwa, Japan, 29. 05. 15.
- Description and influence of the infrared probe field in the attosecond spectroscopy of solid surfaces  
P. Kliuiev, NORDITA Program "Control of ultrafast quantum phenomena", Stockholm, Sweden, 09. 06. 15.
- Study of coherent phonon excitations by means of time-resolved photoelectron diffraction  
M. Hengsberger, International Conference on Ultrafast Structural Dynamics (ICUSD3), Zürich, 11. 06. 15.

- Accessing the self-energy of a correlated material with time-resolved ARPES  
C. Monney, CORPES 15, Paris, France, 06. 07. 15.
- Structure analysis of a 2D oxide quasicrystal using XPD (poster)  
S. Förster, 3rd ICSOS Workshop on the Structure of Surfaces, Lodź, Poland, 24. 07. 15.
- Ferro-antiferromagnetic superexchange coupling: the role of ligands in the Dy<sub>2</sub>ScN and Dy<sub>2</sub>TiC single molecular magnets  
R. Westerström, European Conference on Molecular Magnetism, Zaragoza, Spain, 20. 09. 15.
- A route to single-domain graphene on SiO<sub>2</sub> (poster)  
E. Miniussi, Erlangen Symposium on Synthetic Carbon Allotropes (SCA 2015), Erlangen, Germany, 06. 10. 15.
- Metalation of a polypyridine macrocycle on Au(111): preparation of a water reduction catalyst on a solid substrate  
G. Mette, 62nd International Symposium of the American Vacuum Society, San Jose, CA, USA, 20. 10. 15.
- Two-nanometer void formation in 2D membranes of boron nitride and graphene: nanotents and 'can-opener' effect  
H. Cun, 3rd Euro-Mediterranean Conference on Materials and Renewable Energies (EMCMRE-3), Marrakech, Morocco, 05. 11. 15.
- Controlled metalation of porphyrin molecules on Au(111): preparation of a water reduction catalyst on a solid surface  
G. Mette, 1st German-Chinese Young Scientist Symposium on Structures and Dynamics at Surfaces, Beijing, China, 08. 11. 15.
- Looking for a realization of the excitonic insulator phase in low-dimensional crystals  
C. Monney, Workshop "Spectroscopy on Novel Materials", Saas-Grund, 20. 01. 16.
- From porphyrins to pyrphyrins: adsorption and metalation on Au(111)  
G. Mette, Frühjahrstagung der Deutschen Physikalischen Gesellschaft, Regensburg, Germany, 10. 03. 16.
- Direct link between angular resolved photoelectron spectroscopy and transport properties of large scale single-domain graphene on SiO<sub>2</sub> (poster)  
E. Miniussi, nanomat Science-Industry Workshop on 2D Materials 2016, EMPA Dübendorf, 21. 03. 16.
- Crystalline alumina films of variable thickness on NiAl(110) (poster)  
W.-D. Zabka, Friedrich-Alexander-Universität Physics Academy "Oxides and Their Surfaces", Erlangen, Germany, 17. 03. 16.

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#### Invited lectures

- S. Förster: A 2D oxide quasicrystal and its approximants  
Nanotech@Surfaces Seminar, EMPA Dübendorf, 09. 04. 15.
- S. Förster: A 2D oxide quasicrystal and its approximants  
Seminar, Laboratory of Crystallography, ETH Zürich, 20. 04. 15.
- J. Osterwalder: Exploring pathways towards heterostacks of graphene and hexagonal boron nitride  
US-EU Workshop on 2D Layered Materials and Devices, Arlington, VA, USA, 22. 04. 15.
- T. Greber: Endohedral rare earth single molecule magnets  
International Conference on the Science, Technology and Application of Rare Earths (ICSTAR 15), Trivandrum, India, 24. 04. 15.
- T. Greber: Angle scanned photoelectron diffraction: from near node photoelectron holography to resonant photoelectron diffraction  
588. WE Heraeus-Seminar "Element Specific Structure Determination in Materials on Nanometer and Sub-Nanometer Scales Using X-Ray and Neutron Techniques", Bad Honnef, Germany, 27. 04. 15.
- J. Osterwalder: Functionalities from corrugated 2p<sup>2</sup>-bonded monolayers  
Seminar, Department of Physics, University of Connecticut, Storrs, CT, USA, 28. 04. 15.

- J. Osterwalder: Probing attosecond electron dynamics at solid surfaces  
Photon Science Seminar, Stanford Linear Accelerator Center, Menlo Park, CA, USA, 13. 05. 15.
- L. Castiglioni: Light-matter interaction at atomic length and time scales  
Opto-Nano-Science Seminar, Nara Institute of Science and Technology (NAIST), Nara, Japan, 25. 05. 15.
- J. Osterwalder: Probing attosecond electron emission dynamics at solid surfaces  
ALS Seminar, Lawrence Berkeley Laboratory, Berkeley, CA, USA, 27. 05. 15.
- L. Castiglioni: Light-matter interaction and dynamics at atomic length and time scales  
Special International Lectures, Condensed Matter Physics, Chiba University, Chiba, Japan, 01. 06. 15.
- C. Monney: Looking for a realization of the excitonic insulator phase in low-dimensional crystals  
Seminar, Department of Physics, Waseda University, Tokyo, Japan, 05. 06. 15.
- M. Hengsberger: Two-photon photoemission experiments from negative-electron-affinity diamondoid monolayers  
Molecules on Surfaces Workshop (MOLCH-X), Bern, 08. 06. 15.
- J. Osterwalder: Towards model systems for water splitting reactions using molecular catalysts  
SUNCAT Seminar, Department of Chemical Engineering, Stanford University, Stanford, CA, USA, 25. 06. 15.
- J. Osterwalder: Probing attosecond electron emission dynamics at solid surfaces  
Seminar, School of Chemical, Biological and Environmental Engineering, Oregon State University, Corvallis, OR, USA, 30. 06. 15.
- T. Greber: Lateral segregation on the nanometer scale  
International Workshop on Emerging Functional Electronic Materials and Devices (EEMD 2015), Hohot, China, 01. 07. 15.
- H. Cun: Nanotents and two-nanometer void formation in 2D monolayers on metals  
Seminar, IBM Zürich Research Laboratory, Rüschlikon, 06. 07. 15.
- H. Cun: Nanofiltration with atomically thin membranes  
Seminar, Department of Mechanical and Process Engineering, ETH Zürich, 23. 07. 15.
- T. Greber: Low energy ion implantation beneath 2D materials like boron nitride or graphene: nanotents and can-opener effect  
XXII International Conference on Ion Surface Interactions (ISI-2015), Moscow, Russia, 22. 08. 15.
- S. Förster: Two Lectures: Ways of fabricating perovskite oxide thin films: magnetron sputtering vs. MBE and BaTiO<sub>3</sub>: a functional oxide at the 2D limit  
Summer School of the Collaborative Research Center 1109 on Strategies for the Synthesis and the Characterization of Metal Oxides, Berlin, Germany, 31. 08. 15.
- S. Förster: The 2D oxide quasicrystal and its approximants  
Aperiodic 2015, Prague, Czech Republic, 03. 09. 15.
- L. Castiglioni: Temporal aspects of photoemission from solids  
Workshop on Low-Energy Electrons: Dynamics and Correlations (LEE 2015), Schloss Hernstein, Austria, 09. 09. 15.
- T. Greber: Single layer boron nitride on rhodium: from nanomesh to nanotents  
Discussions Lavoisier, INSA Toulouse, France, 24. 09. 15.
- S. Förster: A two-dimensional oxide quasicrystal  
62nd International Symposium of the American Vacuum Society, San Jose, CA, USA, 22. 10. 15.
- T. Greber: Novel materials: let's go 2D  
Keynote Lecture, 3rd Euro-Mediterranean Conference on Materials and Renewable Energies (EMCMRE-3), Marrakech, Morocco, 02. 11. 15.

- M. Hengsberger: Study of electronic and structural dynamics by means of time-resolved photoelectron spectroscopy and diffraction  
PSI Photon Science Seminar, Villigen, 09. 11. 15.
- L. Castiglioni: Photoelectron diffraction as atomic level structural probe with high temporal resolution  
Seminar, FLASH, DESY Photon Science, Hamburg, Germany, 03. 12. 15.
- H. Cun: Nanotents and two-nanometer void formation and self-healing in 2D monolayers on metals  
Seminar, Laboratory of Nanoscale Biology, EPFL, Lausanne, 07. 12. 15.
- T. Greber: Stiction and adhesion of a liquid on a solid  
Symposium on Surface and Nano Science (SSNS'16), Furano, Japan, 16. 01. 16.
- M. Hengsberger: Physics at the attosecond time scale: the photoemission process studied by attosecond RABBITT  
Physikalisches Kolloquium, Julian-Maximilians-Universität Würzburg, Germany, 18. 01. 16.
- J. Osterwalder: Intercalation-assisted transfer of CVD grown graphene and h-BN from single-crystalline substrates  
Graphene Flagship Work Package 1 Workshop "Advances in the synthesis of graphene", Fuerteventura, Spain, 22. 01. 16.
- T. Greber: Let's go 2D: from nanomesh in the vacuum to smart membranes in liquids  
Seminar, Institute of Applied Physics, Technical University Vienna, Vienna, Austria, 16. 02. 16.
- J. Osterwalder: Surface science on 2D materials  
nanomat Science-Industry Workshop on 2D Materials 2016, EMPA Dübendorf, 22. 03. 16.

## 19.2.4 Biological systems

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### Articles

- Low-energy electron holographic imaging of individual tobacco mosaic virions  
J.-N. Longchamp, T. Latychevskaia, C. Escher and H.-W. Fink, Applied Physics Letters 107, pp. 133101 (2015).
- 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 159, pp. 395-402 (2015).
- Imaging outside the box: Resolution enhancement in X-ray coherent diffraction imaging by extrapolation of diffraction patterns  
T. Latychevskaia, Y. Chushkin, F. Zontone and H.-W. Fink, Applied Physics Letters 107, pp. 183102 (2015).
- The role of the coherence in the cross-correlation analysis of diffraction patterns from two-dimensional dense mono-disperse systems  
T. Latychevskaia, G. Mancini and F. Carbone, Scientific Reports 5, pp. 16573 (2015).
- Filming the formation and fluctuation of Skyrmion domains by cryo-Lorentz Transmission Electron Microscopy  
J. Rajeswari, H. Ping, G. F. Mancini, Y. Murooka, T. Latychevskaia, D. McGrouther, M. Cantoni, E. Baldini, J. S. White, A. Magrez, T. Giamarchi, H.M. Rønnow and F. Carbone, PNAS 112(46), 14212-14217 (2015).
- Invariant time-dependent exchange perturbation theory and its application to the particles collision problem  
E. V. Orlenko, T. Latychevskaia, A. V. Evstafev and F. E. Orlenko, Theoretical Chemistry Accounts 134(5), pp. 1-16 (2015).
- Design and implementation of a micron-sized electron column fabricated by focused ion beam milling  
F. Wicki, J.-N. Longchamp, C. Escher, H.-W. Fink, Ultramicroscopy, Vol. 160, 74-79, (2016).
- Order/disorder dynamics in a dodecanethiol-capped gold nanoparticles supracrystal by small-angle ultrafast electron diffraction  
G. F. Mancini, T. Latychevskaia, F. Pennacchio, J. Reguera, F. Stellacci and F. Carbone, Nano Letters 16 (4), 2705-2713 (2016).

## Article in press

- Resolution enhancement by extrapolation of coherent diffraction images: a quantitative study about the limits and a numerical study of non-binary and phase objects  
T. Latychevskaia, Y. Chushkin and H.-W Fink, *Journal of Optics* (2016), accepted.

## Invited lectures

- T. Latychevskaia: Resolution enhancement in coherent imaging via extrapolation beyond detector area  
Optical Society of America Optics and Photonics Congress, Washington, USA, June 2015.
- J.-N. Longchamp: Enabling Structural Biology at the Truly Single Molecule Level  
Seminar in Physics, University of Erlangen-Nürnberg, Erlangen, Germany, June 2015.
- J.-N. Longchamp: Enabling Structural Biology at the Truly Single Molecule Level  
3rd Ringberg Workshop on Structural Biology with FELs, Ringberg Castle, Germany, February 2016.

## Contributed conference presentations

- Structural Biology at The Single Particle Level: Imaging Tobacco Mosaic Virus by Low-Energy Electron Holography  
J.-N. Longchamp, *Microscopy and Microanalysis 2015*, Portland, USA, August 2015.
- Imaging proteins at the truly single molecule level  
J.-N. Longchamp, *Annual Meeting of the German Society for Mass Spectrometry*, Hamburg, Germany, March 2016.
- Ultraclean Freestanding Graphene by Pt-metal catalysis  
J.-N. Longchamp, *Annual Meeting of the German Physical Society*, Regensburg, Germany, March 2016.
- Imaging proteins at the truly single molecule level  
J.-N. Longchamp, *Annual Meeting of the German Physical Society*, Regensburg, Germany, March 2016.

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**19.2.5 Disordered and Biological Soft Matter**

## Articles

- 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).
- Can Anderson localization of light be reached with white paint?  
T. Sperling, L. Schertel, M. Ackermann, G. Aubry, C.M. Aegerter, and G. Maret,  
*New Journal of Physics*, **18** 013039 (2016).

## Articles in press

- Looking Beyond the Genes: The Interplay Between Signaling Pathways and Mechanics in the Shaping and Diversification of Epithelial Tissues.  
S. Urdy, N. Goudemand, and S. Pantalacci, *Current Topics in Developmental Biology*  
(in press, to be published June 2016).

## Conference reports

- Structured illumination using SLM  
A. Malavalli; Transformations in optics: Bridging wavefront shaping, compressive sensing, and structured illumination, Lorentz Center, Leiden, The Netherlands (May 18 - 22 2015).
- Determining the mechanical properties of zebrafish caudal fins  
S. Puri; Sinergia retreat, Schwarzsee, Switzerland (July 2 - 3 2015).

- Determining forces from hydrodynamic flows  
P. Dagenais; Sinergia retreat, Schwarzsee, Switzerland (July 2 - 3 2015).
- The role of mechanical forces in plasticity of fin regeneration  
C.M. Aegerter; Sinergia retreat, Schwarzsee, Switzerland (July 2 - 3 2015).
- FRET based force sensor in Drosophila tissues  
D. Eder; Picoquant FLIM Workshop, Berlin, Germany March 07-11 2016.
- Determining forces from hydrodynamic flows  
P. Dagenais; Fluid Mechanics and Collective Behavior: From Cells to Organisms, Monte Verita, Ascona, Switzerland (April 2 - 7 2016).

#### Invited lectures

- C.M. Aegerter: Lichtzauberei  
Scientifica 15, ETH and UZH, Zürich (05./06.09.2015).
- C.M. Aegerter: Public Christmas lecture  
Physics Institute, University of Zurich (17.12.2015).
- C.M. Aegerter: Optik und Mechanik in der Entwicklungsbiologie  
Physik-Kolloquium, University of Konstanz, Germany (12.01.2016).
- C.M. Aegerter: Physik der ungeordneten Systeme ausserhalb des Gleichgewichts  
MNG Rämibühl, Zurich (08.02.2016).
- C.M. Aegerter: Public Easter lecture  
Physics Institute, University of Zurich (30.03.2016).
- S. Urdy: Stochastic cell-based model of the interaction between epithelial cells and the extra-cellular matrix.  
SystemsX Day in Bern, (15.09.2015).
- S. Urdy: Stochastic cell-based model of the interaction between epithelial cells and the extra-cellular matrix.  
European Molecular Biology Laboratory (EMBL Conference) in Heidelberg, Germany:  
Physics of cells and tissues 2015: Modelling meets experiment (01.10.2015).

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## 19.3 PhD, Master and Bachelor Theses

### 19.3.1 PhD Theses

- NNLO QCD Corrections to Higgs Plus One Jet Production  
Matthieu Jaquier, PhD thesis, April 2015.
- Higgs Boson Production via Gluon Fusion at Hadron Colliders: Soft Gluon Resummation with Mass Effects  
Timo Schmidt, PhD thesis, June 2015.
- Vector Boson Pair Production in NNLO QCD  
Dirk Rathlev, PhD thesis, September 2015.
- Distribution of Matter in the Universe: from Lensing Clusters to Large Scale Structure  
Irshad Mohammed, PhD thesis, September 2015.
- Background Reduction Techniques for the GERDA Experiment  
Manuel Walter, PhD thesis, Universität Zürich, September 2015.
- Testing General Relativity with Gravitational Waves  
Lorenzo De Vittorio, PhD thesis, November 2015.
- Testing General Relativity with Gravitational Waves  
Simone Balmelli, PhD thesis, December 2015.

- Data Reconstruction and Analysis for the GERDA Experiment  
Giovanni Benato, PhD thesis, Universität Zürich, December 2015.
- Holographic diffraction imaging at the nano-scale by coherent hard x-ray synchrotron radiation  
Mirna T. Saliba, PhD Thesis, Physik-Institut, Universität Zürich, March 2016.

### 19.3.2 Master theses

- Die Herstellung möglichst perfekter Kupferfilme  
Dennis Moor, Master Thesis, May 2015.
- Shifting Phase Boundaries with Radiation  
Daniel Destraz, Master Thesis, June 2015.
- Measurement of  $\sigma(pp \rightarrow b\bar{b}X)$  at 8 TeV in the Forward Region of the LHCb experiment  
Dario Biasini, Master Thesis, June 2015.
- Characterisation of an imaging spin detector and first proof-of-principle time-resolved measurements  
Stefan Holenstein, Master Thesis, September 2015.
- Emanation Measurement System and GERDA Phase II Calibration  
Michael Miloradovic, Master Thesis, November 2015.
- Neutrino induced background studies for the SHiP experiment  
Nathalie Chételat, Master Thesis, December 2015.
- Investigation of a semiconductor / molecule junction: (Co)Porphyrin on TiO<sub>2</sub>  
Manuel Graf, Master Thesis, December 2015.
- Electroweak Sudakov Logarithms in Vector Boson plus Jet Production  
Niklaus Häfliger, Master Thesis, January 2016.
- New Approach to the Circle Hough Transform for Detecting Cherenkov Rings in the LHCb RICH detector  
Philip Gloor, Master Thesis, March 2016.
- A reduced order Model for the non-linear Schrödinger equation  
Tino Valentin Bächtold, Master thesis, March 2016.
- Design of a Dual-phase Xenon TPC with a Hybrid Photosensor Array  
Andrea Gmuer, Master Thesis, March 2016.

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### 19.3.3 Bachelor theses

- Die Herstellung möglichst perfekter Kupferfilme  
Dennis Moore, Bachelor Thesis, May 2015.
- Characterisation of mechanical properties of the FlashCam camera housing with respect to external mechanical influences  
Christian Huber, Bachelor Thesis, July 2015.
- Jahn-Teller- Effekt in Ba<sub>3-x</sub>Sr<sub>x</sub>Cr<sub>2</sub>O<sub>8</sub>  
Patrick Kretz, Bachelor Thesis, September 2015.
- Transport measurements on ultraclean Graphene by Palladium-metal catalysis  
Davide Rocco, Bachelor Thesis, October 2015.
- Generation of optical Airy beams  
Daniel Schachtler, Bachelor Thesis, October 2015.



- Generalized Unitarity for 5-gluon amplitudes  
Uriel Nakach, Bachelor Thesis, October 2015.
- Solitons  
Daniel Fäh, Bachelor Thesis, October 2015.
- Transport measurements on ultraclean graphene by Palladium-metal catalysis  
Davide Pietro Rocco, Bachelor Thesis, October 2015.
- Creation of Airy beams with Spatial Light Modulator and study of their optical properties  
Daniel Schachtler, Bachelor Thesis, October 2015.
- Röntgenfluoreszenz zur Monochromatisierung für die Untersuchung von supraleitenden Nanodraht Einzelphotonendetektoren  
Michael Hotz, Bachelor Thesis, November 2015.
- Numerical Analysis of the Effects of an Applied Magnetic Field on the Vortex-assisted Photon Count of SNSPDs  
Georg Meili, Bachelor Thesis, December 2015.
- Sun-Moon Gravitational Red-Shift Tests  
Claude Liechti, Bachelor Thesis, December 2015.
- Kabel Test für die FlashCam des Cherenkov Telescope Array  
Oliver Dahme, March 2016.