

## Philippe MERMOD

**Birth** 08.1978 in Geneva  
**Nationality** Swiss and French  
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### Qualifications

#### 04.2002–07.2006 PhD degree, Uppsala U., Sweden

*Project* Measurement of neutron scattering angular distributions at 95 MeV with three independent setups; tests of three-nucleon forces

*Supervisor* Prof. Jan Blomgren (jan.blomgren@inbex.se)

*Scholarship* AIM graduate education, including student travel money

#### 10.1997–04.2002 MSc - Physics degree, U. Geneva, Switzerland

*Project* Photon structure function measurement with the L3 detector at LEP

*Supervisor* Prof. Maria Kienzle (maria.kienzle@cern.ch)

*Mobility* CERN summer student  
One year as exchange student at Humboldt U., Berlin

### Research

#### 10.2014–present Assistant professor, U. Geneva, Switzerland

*Project leadership* Scintillator-based background taggers for the SHiP experiment  
Search for displaced heavy neutral lepton decays in ATLAS  
Highly-ionising particle search in ATLAS run-2  
Searches for trapped magnetic monopoles at the LHC

*Other projects* SHiP muon flux calibration using NA61/SHINE

*Coordination* SHiP veto-timing convener

MoEDAL analysis coordinator and trapping subdetector coordinator

*Awarded grants* SERI-COST research project (CHF 157'000)

Swiss National Science Foundation Professor Fellowship (CHF 1'580'000)

#### 10.2011–09.2014 Research associate, U. Geneva, Switzerland

*Project leadership* New trigger and search for highly-ionising particles in ATLAS run-1  
Pioneering trapped monopole search at the LHC with MoEDAL  
Search for monopoles in polar volcanic rocks  
Physics Report review on stable massive particles at non-collider facilities  
Sensitivity of LHC detectors to highly-ionising particles

*Other projects* Physics motivation for an enhanced ATLAS TRT FastOR level-1 trigger  
Exotic physics prospects with ATLAS Forward Protons (AFP)

*Coordination* Convener of the ATLAS exotic long-lived particles subgroup

MoEDAL software coordinator and trapping subdetector coordinator

*Awarded grants* Swiss National Science Foundation Ambizione Fellowship (CHF 545'300)

Ernst and Lucie Schmidheiny Foundation travelling grant (CHF 3'000)

Academic Society of Geneva grant covering magnetometer runs (CHF 5'000)

**08.2009–09.2011 Advanced postdoc, U. Oxford, England***Project leadership* Pioneering ATLAS highly-ionising particle search (first at the LHC)*Other projects* Contributions to the first ATLAS *R*-hadron search

Commissioning duties for ATLAS missing transverse energy trigger

*Supervisor* Dr. Cigdem Issever (c.issever1@physics.ox.ac.uk)*Awarded grant* Swiss National Science Foundation Advanced Researchers Fellowship (CHF 172'000)**08.2007–07.2009 Postdoc, Stockholm U., Sweden***Projects* Study of ATLAS *R*-hadron search strategy and discovery potential

Development of slow-moving particle identification techniques

Effects of calorimeter failures on jet and missing energy reconstruction

*Supervisor* Prof. David Milstead (milstead@physto.se)**08.2006–07.2007 One year parental leave following birth of second child****Student and postdoc supervision**

11.2015–present Mentor: research associate Alexander Korzenev, U. Geneva

10.2014–present Supervisor: PhD students Anthony Lioni and Arnaud Dubreuil; and postdoc Avishek Chatterjee, U. Geneva

02.2012–present Supervisor: PhD student Akshay Katre, U. Geneva

08.2007–12.2014 Co-supervisor: PhD students Christian Ohm and Katarina Bendtz, and two undergraduate students, Stockholm U.

03.2004–09.2005 Co-supervisor: three undergraduate students, Uppsala U.

**Academic teaching**

04.2016–05.2016 CUSO graduate course on new long-lived particles

02.2015–09.2016 Spring terms, general physics course for students in biology, U. Geneva

09.2012–06.2013 Exercises and exams for electrodynamics course, U. Geneva

10.2011–12.2012 Introductory lectures in applied statistics, U. Geneva

04.2008–05.2009 Tutorials in quantum mechanics, Stockholm U.

10.2003–05.2005 Laboratories and exercises in electrical engineering, Uppsala U.

10.2002–02.2003 Completion of a course in pedagogy for university teachers (4 weeks full-time studies), Uppsala U.

10.2000–04.2002 Physics laboratories, U. Geneva

**Talks and seminars**

Over the last 5 years: invited talks at 16 international workshops and conferences; seminars and colloquia at 8 universities and research centres.

**Spoken languages****French** (native), **English** (fluent), **Swedish** (fluent), **German** (conversational)

## List of selected publications

### International journals, primary author

1. MoEDAL Collaboration, *Search for magnetic monopoles with the MoEDAL forward trapping detector in 13 TeV proton-proton collisions at the LHC*, to be submitted to Phys. Rev. Lett. (2016).
2. A. Blondel, D. Breton, A. Dubreuil, A. Khotyantsev, A. Korzenev, J. Maalmi, A. Mefodev, P. Mermod, and E. Noah, *Study of timing characteristics of a 3 m long plastic scintillator counter using waveform digitizers*, submitted to Nucl. Int. Meth. A (2016), arXiv:1610.05667.
3. MoEDAL Collaboration, *Search for magnetic monopoles with the MoEDAL trapping detector in 8 TeV proton-proton collisions at the LHC*, JHEP 08, 067 (2016), arXiv:1604.06645.
4. ATLAS Collaboration, *Search for magnetic monopoles and stable particles with high electric charges in 8 TeV pp collisions with the ATLAS detector*, Phys. Rev. D 93, 052009 (2016), arXiv:1509.08059.
5. S. Burdin, M. Fairbairn, P. Mermod, D. Milstead, J. Pinfold, T. Sloan, and W. Taylor, *Non-collider searches for stable massive particles*, Phys. Rep. 582, 1 (2015), arXiv:1410.1374.
6. K. Bendtz, H.-P. Hächler, A. M. Hirt, P. Mermod, P. Michael, D. Milstead, C. Tegner, T. Sloan, and S. B. Thorarinsson, *Search for magnetic monopoles in polar volcanic rocks*, Phys. Rev. Lett. 110, 121803 (2013), arXiv:1301.6530.
7. ATLAS Collaboration, *Search for magnetic monopoles in  $\sqrt{s} = 7$  TeV pp collisions with the ATLAS detector*, Phys. Rev. Lett. 109, 261803 (2012), arXiv:1207.6411.
8. A. De Roeck, H.-P. Hächler, A. M. Hirt, M. Dam Joergensen, A. Katre, P. Mermod, D. Milstead, and T. Sloan, *Development of a magnetometer-based search strategy for stopped monopoles at the Large Hadron Collider*, Eur. Phys. J. C 72, 2212 (2012), arXiv:1206.6793.
9. A. De Roeck, A. Katre, P. Mermod, D. Milstead, and T. Sloan, *Sensitivity of LHC experiments to exotic highly ionising particles*, Eur. Phys. J. C 72, 1985 (2012), arXiv:1112.2999.
10. ATLAS Collaboration, *Search for Massive Long-lived Highly Ionising Particles with the ATLAS Detector at the LHC*, Phys. Lett. B 698, 353 (2011), arXiv:1102.0459.
11. P. Mermod *et al.* (21 authors), *95 MeV neutron scattering on hydrogen, deuterium, carbon and oxygen*, Phys. Rev. C 74, 054002 (2006).
12. P. Mermod *et al.* (18 authors), *Evidence of three-body force effects in neutron-deuteron scattering at 95 MeV*, Phys. Rev. C 72, 061002(R) (2005).
13. P. Mermod *et al.* (18 authors), *Search for three-body force effects in neutron-deuteron scattering at 95 MeV*, Phys. Lett. B 597, 243 (2004).

### International journals, significant contributor

1. ATLAS Collaboration, *Search for massive, long-lived particles using multitrack displaced vertices or displaced lepton pairs in pp collisions at  $\sqrt{s} = 8$  TeV with the ATLAS detector*, Phys. Rev. D 92, 072004 (2015), arXiv:1504.05162.
2. MoEDAL Collaboration, *The physics programme of the MoEDAL experiment at the LHC*, Int. J. Mod. Phys. A 29, 1430050 (2014), arXiv:1405.7662.
3. ATLAS Collaboration, *Search for long-lived, multi-charged particles in pp collisions at  $\sqrt{s} = 7$  TeV using the ATLAS detector*, Phys. Lett. B 722, 305 (2013), arXiv:1301.5272.
4. ATLAS Collaboration, *Triggers for displaced decays of long-lived neutral particles in the ATLAS detector*, JINST 8, P07015 (2013), arXiv:1305.2284.
5. ATLAS Collaboration, *Search for displaced muonic lepton jets from light Higgs boson decay in proton-proton collisions at  $\sqrt{s} = 7$  TeV with the ATLAS detector*, Phys. Lett. B 721, 32 (2013), arXiv:1210.0435.
6. ATLAS Collaboration, *Search for WH production with a light Higgs boson decaying to prompt electron-jets in proton-proton collisions at  $\sqrt{s} = 7$  TeV with the ATLAS detector*, New J. Phys. 15, 043009 (2013), arXiv:1302.4403.

7. ATLAS Collaboration, *Search for a light Higgs boson decaying to long-lived weakly-interacting particles in proton-proton collisions at  $\sqrt{s} = 7$  TeV with the ATLAS detector*, Phys. Rev. Lett. 108, 251801 (2012), arXiv:1203.1303.
8. ATLAS Collaboration, *Search for Stable Hadronising Squarks and Gluinos at the ATLAS Experiment at the LHC*, Phys. Lett. B 701, 1 (2011), arXiv:1103.1984.
9. ATLAS Collaboration, *Readiness of the ATLAS Tile Calorimeter for LHC collisions*, Eur. Phys. J. C 70, 1193 (2010).
10. A. Öhrn *et al.* (39 authors), *Elastic scattering of 96 MeV neutrons from iron, yttrium, and lead*, Phys. Rev. C 77, 024605 (2008).
11. Y. Maeda *et al.* (34 authors), *Differential cross section and analyzing power measurements for polarized  $n(d)$  elastic scattering at 248-MeV*, Phys. Rev. C 76, 014004 (2007).
12. U. Tippawan *et al.* (33 authors), *Light-ion production in the interaction of 96-MeV neutrons with oxygen*, Phys. Rev. C 73, 034611 (2006).
13. C. Johansson *et al.* (18 authors), *Forward-angle neutron-proton scattering at 96 MeV*, Phys. Rev. C 71, 024002 (2005).
14. L3 Collaboration, *Measurement of the photon structure function  $F_2^\gamma$  with the L3 detector at LEP*, Phys. Lett. B 622, 249 (2005), arXiv:hep-ex/0507042.
15. U. Tippawan *et al.* (21 authors), *Light ion production in the interaction of 96-MeV neutrons with silicon*, Phys. Rev. C 69, 064609 (2004).
16. J. Klug *et al.* (30 authors), *Elastic neutron scattering at 96-MeV from C-12 and Pb-208*, Phys. Rev. C 68, 064605 (2003).

### Conference proceedings, primary author

1. P. Mermod, K. Bendtz, A. Katre, D. Lacarrère, D. Milstead, J. Pinfold, and R. Soluk, *Search in 8 TeV  $pp$  collisions with the MoEDAL monopole-trapping test array*, 14th ICATPP Conference, Como, Italy, 23 – 27 September 2013, arXiv:1311.6940.
2. P. Mermod, A. Katre, D. Lacarrère, J. Pinfold, and R. Soluk, *Magnetic monopole searches with the MoEDAL experiment at the LHC*, EPS-HEP 2013 Conference, Stockholm, Sweden, 18 – 24 July 2013, PoS(EPS-HEP 2013)301.
3. P. Mermod and D. Milstead, *Search for Magnetic Monopoles in Volcanic Rock*, EPS-HEP 2013 Conference, Stockholm, Sweden, 18 – 24 July 2013, PoS(EPS-HEP 2013)302.
4. P. Mermod, *Magnetic monopoles at the LHC and in the Cosmos*, 48th Rencontres de Moriond, La Thuile, Italy, 9 – 16 March 2013, arXiv:1305.3718.
5. P. Mermod, *Discovery Potential of R-hadrons with the ATLAS Detector at the LHC*, SUSY09 Conference, Boston, Massachusetts, 5 – 10 June 2009, AIP Conference Proceedings 1200, 748 (2009).
6. P. Mermod *et al.* (18 authors), *Three-body force effects in neutron-deuteron scattering at 95 MeV*, MENU 2007 Conference, 10 – 14 September 2007, Forschungszentrum Juelich, Germany, SLAC eConf C070910 (2007).
7. P. Mermod *et al.* (8 authors), *Precision Measurements of the  $np$  Differential Cross Section in the Intermediate Energy Region*, Tenth Symposium on Neutron Dosimetry, 12 – 16 June 2006, Uppsala, Sweden, Radiation Protection Dosimetry 126, 109 (2007).
8. P. Mermod *et al.* (8 authors), *Kerma coefficients for neutron scattering on  $^{12}\text{C}$  and  $^{16}\text{O}$  at 96 MeV*, Tenth Symposium on Neutron Dosimetry, 12 – 16 June 2006, Uppsala, Sweden, Radiation Protection Dosimetry 126, 113 (2007).
9. P. Mermod *et al.* (8 authors), *Fast Neutron Scattering on Carbon and Oxygen*, International Workshop on Fast Neutron Detectors and Applications, 3 – 6 April 2006, University of Cape Town, South Africa, Proceedings of Science, PoS(FNDA2006), 071 (2006).

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10. P. Mermod *et al.* (18 authors), *Investigation of three-body force effects in neutron-deuteron scattering at 95 MeV*, ND2004 Conference, Santa Fé, New Mexico, USA, 26 September–1 October 2004, AIP Conference Proceedings 769, 688 (2005).