

CURRICULUM VITAE

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Philippe MERMOD

Birth: 08.08.1978 in Geneva

Nationality: Swiss

Marital status: married, 3 children

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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

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

Mobility CERN summer student

One year as exchange student at Humboldt U., Berlin

Research**10.2014–present Assistant professor, U. Geneva, Switzerland**

Project leadership Pioneering search for displaced heavy neutral lepton decays at ATLAS run-2

Highly-ionising particle search at ATLAS run-2

Trapped magnetic monopole searches at MoEDAL

Scintillator-based background taggers for the SHiP experiment

Time-of-flight detector for T2K ND280 detector upgrade

Other projects Nuclear-track detector calibration and scanning tests for MoEDAL

Coordination MoEDAL analysis coordinator and trapping detector coordinator

SHiP timing detector convener

Awarded grants SNSF Professor Fellowship (CHF 1'580'000)

SERI-COST fast scintillator timing detector R&D (CHF 157'000)

10.2011–09.2014 Research associate, U. Geneva, Switzerland

Project leadership New trigger and search for highly-ionising particles at ATLAS run-1

Pioneering trapped monopole search at MoEDAL

Search for monopoles in polar volcanic rocks

Review on stable massive particle searches at non-collider facilities

Study of LHC sensitivity 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 ATLAS exotic long-lived particles subgroup convener

MoEDAL software coordinator and trapping detector coordinator

Awarded grants SNSF Ambizione Fellowship (CHF 545'300)

Ernst and Lucie Schmidheiny Foundation travel 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

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 SNSF Advanced Researcher 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@fysik.su.se)

08.2006–07.2007 One year parental leave following birth of second child

Student and postdoc supervision

01.2016–present Mentor: research associate Alexander Korzenev, U. Geneva

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

10.2014–12.2015 Mentor: postdoc Avishek Chatterjee, U. Geneva

02.2012–09.2016 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

02.2015–09.2018 Spring terms, general physics course for students in biology, U. Geneva

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

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 past 5 years: invited talks at 15 international workshops and conferences; seminars and colloquia at 12 universities and research centres.

Spoken languages

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

List of references

The following senior people worked closely with me during the indicated time periods.

2007–present **Prof. David Milstead**

Relationship Postdoc supervisor (2007–2009), mentor and collaborator

Contact Fysikum, Stockholm U.

SE–106 91 Stockholm

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2010–present **Prof. Wendy Taylor**

Relationship Collaborator ATLAS monopole searches

Contact Department of Physics and Astronomy, York U.

Toronto, ON Canada M3J 1P3

taylorw@yorku.ca • +1 (0)416 7362100

2011–present **Prof. James Pinfold**

Relationship Collaborator, spokesperson MoEDAL experiment

Contact Department of Physics, U. Alberta

Edmonton, AB Canada T6G 2R3

jpinfold@ualberta.ca • +1 (0)780 4922498

2011–present **Prof. Albert de Roeck**

Relationship Collaborator trapped monopole searches at the LHC

Contact Physics Department, CERN

CH–1217 Meyrin, Switzerland

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2014–present **Prof. Alain Blondel**

Relationship Mentor and collaborator T2K experiment

Contact DPNC, U. Geneva

CH - 1211 Geneva 4, Switzerland

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2014–present **Prof. Heiko Lacker**

Relationship Collaborator ATLAS displaced HNLs and SHiP veto detectors

Contact Physics Department, Humboldt U. Berlin

D-12489 Berlin

lacker@physik.hu-berlin.de • +49 (0)30 20937817

2015–present **Prof. Teresa Montaruli**

Relationship Shared teaching responsibilities for course in general physics

Contact DPNC, U. Geneva

CH - 1211 Geneva 4, Switzerland

teresa.montaruli@unige.ch • +41 (0)22 3793675 / +41 (0)75 4118511

2011–present **Prof. Giuseppe Iacobucci**

Relationship Head of department and institute ATLAS group leader

Contact DPNC, U. Geneva

CH - 1211 Geneva 4, Switzerland

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List of selected publications

International journals, primary author

1. **P. Mermod** *et al.*, MoEDAL Collaboration, *Search for magnetic monopoles with the MoEDAL forward trapping detector in 2.11 fb^{-1} of 13 TeV proton-proton collisions at the LHC*, Submitted to Phys. Lett. B (2017), arXiv:1712.09849.
2. C. Betancourt, A. Blondel, R. Brundler, A. Daetwyler, Y. Favre, D. Gascon, S. Gomez, A. Korzenev, **P. Mermod**, E. Noah, N. Serra, D. Sgalaberna, and B. Storaci, *Application of a large area SiPMs for the readout of a plastic scintillator based timing detector*, JINST 12, P11023 (2017), arXiv:1709.08972.
3. 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*, Nucl. Instrum. Meth. A877, 9 (2018), arXiv:1610.05667.
4. **P. Mermod** *et al.*, MoEDAL Collaboration, *Search for magnetic monopoles with the MoEDAL forward trapping detector in 13 TeV proton-proton collisions at the LHC*, Phys. Rev. Lett. 118, 061801 (2017), arXiv:1611.06817.
5. **P. Mermod** *et al.*, 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.

6. **P. Mermod et al.**, 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.
7. 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.
8. 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.
9. **P. Mermod et al.**, 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.
10. 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.
11. 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.
12. **P. Mermod et al.**, 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.
13. **P. Mermod et al.** (21 authors), *95 MeV neutron scattering on hydrogen, deuterium, carbon and oxygen*, Phys. Rev. C 74, 054002 (2006).
14. **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).
15. **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, *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.
5. 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.
6. 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.
7. 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.

8. ATLAS Collaboration, *Readiness of the ATLAS Tile Calorimeter for LHC collisions*, Eur. Phys. J. C 70, 1193 (2010).
9. A. Öhrn *et al.* (39 authors), *Elastic scattering of 96 MeV neutrons from iron, yttrium, and lead*, Phys. Rev. C 77, 024605 (2008).
10. 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).
11. U. Tippawan *et al.* (33 authors), *Light-ion production in the interaction of 96-MeV neutrons with oxygen*, Phys. Rev. C 73, 034611 (2006).
12. C. Johansson *et al.* (18 authors), *Forward-angle neutron-proton scattering at 96 MeV*, Phys. Rev. C 71, 024002 (2005).
13. L3 Collaboration, *Measurement of the photon structure function F_2^γ with the L3 detector at LEP*, Phys. Lett. B 622, 249 (2005), arXiv:hep-ex/0507042.
14. U. Tippawan *et al.* (21 authors), *Light ion production in the interaction of 96-MeV neutrons with silicon*, Phys. Rev. C 69, 064609 (2004).
15. 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** (on behalf of the SHiP Collaboration), *Hidden sector searches with SHiP and NA62*, 19th International Workshop on Neutrinos from Accelerators (NUFACT2017), Uppsala, Sweden, 25 – 30 September 2017, arXiv:1712.01768.
2. C. Betancourt, A. Blondel, R. Brundler, A. Daetwyler, Y. Favre, D. Gascon, S. Gomez, A. Korzenev, **P. Mermod**, E. Noah, N. Serra, D. Sgalaberna, and B. Storaci, *Application of SiPM arrays for the readout of a scintillator based time-of-flight detector*, to appear in proceeding for EPS-HEP Conference, Venice, Italy, 5–12 July 2017.
3. **P. Mermod** (on behalf of the MoEDAL Collaboration), *Magnetic monopole search in 13 TeV collisions with the MoEDAL experiment*, to appear in Rencontres de Moriond: QCD and High Energy Interactions, La Thuile, Italy, 25 March – 1 April 2017.
4. **P. Mermod** (on behalf of the SHiP Collaboration), *Right-handed neutrinos: the hunt is on!*, Prospects in Neutrino Physics (NuPhys2016), London, UK, 12 – 14 December 2016, arXiv:1704.08635.
5. **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.
6. **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.
7. **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.
8. **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.
9. **P. Mermod** (on behalf of the ATLAS Collaboration), *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).

10. **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).
11. **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).
12. **P. Mermod et al.** (8 authors), *Kerma coefficients for neutron scattering on ^{12}C and ^{16}O at 96 MeV*, Tenth Symposium on Neutron Dosimetry, 12 – 16 June **2006**, Uppsala, Sweden, Radiation Protection Dosimetry 126, 113 (2007).
13. **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).
14. **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).