

Dr. Matthew S. Rudolph

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Academic positions

- **Syracuse University** **Syracuse, NY, USA**
Assistant Professor *2015 – present*
- **University of Toronto** **Toronto, ON, Canada**
Research Associate *2011 – 2015*

Education

- **Massachusetts Institute of Technology** **Cambridge, MA, USA**
PhD Particle Physics *2005 – 2011*
 - Thesis title: *Measurement of $\Upsilon(1S)$ spin alignment with the CMS detector*
 - **Johns Hopkins University** **Baltimore, MD, USA**
BS Physics, BA Math *2001 – 2005*
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Research experience and interests

- LHCb Collaboration at Large Hadron Collider 2015 – present
 - Upstream Tracker upgrade:
 - * Work package leader for silicon sensors: responsible for design, procurement, and quality assurance of all silicon microstrip sensors
 - * Supervision of group of students on software development for simulation and monitoring
 - Studies of partially reconstructed B decays, including semileptonic measurements and searches for physics beyond the Standard Model
- ATLAS Collaboration at Large Hadron Collider 2011 – 2015
 - Software for Diamond Beam Monitor detector upgrade
 - Top Quark Physics, focused on properties of top quarks in pp collisions
 - Primary vertex reconstruction
- CMS Collaboration at Large Hadron Collider 2005 – 2011

- First measurements for production of Υ mesons.
 - Track reconstruction
 - Silicon tracking detector commissioning
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Selected publications

A full, searchable list of publications is available online at INSPIREHEP. Selected publications are included below.

LHCb Collaboration. *Search for the lepton flavour violating decay $B^+ \rightarrow K^+ \mu^- \tau^+$ using B_{s2}^{*0} decays.* Accepted by JHEP (2020) arXiv: 2003.04352 [hep-ex].

LHCb Collaboration. *Measurement of the relative $B^- \rightarrow D^0/D^{*0}/D^{**0} \mu^- \bar{\nu}_\mu$ branching fractions using B^- mesons from \bar{B}_{s2}^{*0} decays.* Phys. Rev. D 99.9 (2019) 092009. DOI: 10.1103/PhysRevD.99.092009. arXiv: 1807.10722 [hep-ex].

Artuso, M. et al. *Signal coupling to embedded pitch adapters in silicon sensors.* Nucl. Instrum. Meth. A877 (2018) 252–258. DOI: 10.1016/j.nima.2017.09.039. arXiv: 1708.03371 [physics.ins-det].

Rudolph, Matthew. *An experimentalist's guide to the semileptonic bottom to charm branching fractions.* Int. J. Mod. Phys. A 33.32 (2018) 1850176. DOI: 10.1142/S0217751X18501762. arXiv: 1805.05659 [hep-ph].

ATLAS Collaboration. *Measurements of top quark spin observables in $t\bar{t}$ events using dilepton final states in $\sqrt{s} = 8$ TeV pp collisions with the ATLAS detector.* JHEP 03 (2017) 113. DOI: 10.1007/JHEP03(2017)113. arXiv: 1612.07004 [hep-ex].

ATLAS Collaboration. *Reconstruction of primary vertices at the ATLAS experiment in Run 1 proton–proton collisions at the LHC.* Eur. Phys. J. C 77.5 (2017) 332. DOI: 10.1140/epjc/s10052-017-4887-5. arXiv: 1611.10235 [physics.ins-det].

ATLAS Collaboration. *Measurement of Top Quark Polarization in Top-Antitop Events from Proton-Proton Collisions at $\sqrt{s} = 7$ TeV Using the ATLAS Detector.* Phys. Rev. Lett. 111.23 (2013) 232002. DOI: 10.1103/PhysRevLett.111.232002. arXiv: 1307.6511 [hep-ex].

CMS Collaboration. *Measurement of the $Y(1S)$, $Y(2S)$ and $Y(3S)$ polarizations in pp collisions at $\sqrt{s} = 7$ TeV.* Phys.Rev.Lett. 110 (2013) 081802. DOI: 10.1103/PhysRevLett.110.081802. arXiv: 1209.2922 [hep-ex].

CMS Collaboration. *Measurement of the Inclusive Υ production cross section in pp collisions at $\sqrt{s} = 7$ TeV.* Phys.Rev. D83 (2011) 112004. DOI: 10.1103/PhysRevD.83.112004. arXiv: 1012.5545 [hep-ex].

CMS Tracker Collaboration. *Performance studies of the CMS Strip Tracker before installation.* JINST 4 (2009) P06009. DOI: 10.1088/1748-0221/4/06/P06009. arXiv: 0901.4316 [physics.ins-det].

Conference presentations and seminars

Beyond the Standard Model hints in b-hadron decays. Invited talk at APS April Meeting, 20 April 2020.

Lepton Flavor Universality and Violation at LHCb. MIT Laboratory for Nuclear Science Colloquium, 4 November 2019.

Upstream Tracker upgrade for LHCb. Vertex 2019: 28th International Workshop on Vertex Detectors, 18 October 2019. Proceedings published by Proceedings of Science.

Lepton flavor universality and violation at LHCb. Fermilab joint experimental-theoretical physics seminar, 7 December 2018.

Other semileptonic studies at LHCb. The International Conference on B-Physics at Frontier Machines, BEAUTY. 8 May 2018.

HL/HE Detector challenges for LHCb. HL/HE LHC Physics workshop, Fermilab, 4 April 2018.

What's new at LHCb. Penn State University High Energy Physics Seminar, 8 November 2017.

Embedded pitch adapters. New Technologies for Discovery III: the 2017 CPAD Instrumentation Frontier Workshop, 13 October 2017.

Semileptonic B decays at LHCb. APS Division of Particles and Fields meeting, 3 August 2017.

The LHCb Upgrades. APS Division of Particles and Fields meeting, 1 August 2017.

Top Quark Property Measurements with ATLAS. Les Rencontres de Physique de la Vallée d'Aoste, La Thuile, 1-7 March 2015.

Standard Model Measurements with ATLAS. Canadian Association of Physicists Congress, 16-20 June 2014.

Top production and properties measurements in ATLAS. Lake Louise Winter Institute, 17-23 February 2013.

Quarkonium production in pp collisions at the LHC. Brookhaven Summer Program on "Quarkonium Production in Elementary and Heavy Ion Collisions", 6-18 June 2011