Prof. Christopher S. Hill

3048 Physics Research Building
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Academic Appointments

- Professor of Physics, *The Ohio State University*, 2014–
- Associate Professor of Physics, *The Ohio State University*, 2010–2014
- Reader in Physics, *University of Bristol*, 2009–2010
- Senior Lecturer in Physics, *University of Bristol*, 2007–2009
- Lecturer in Physics, *University of Bristol*, 2006–2007
- Post-doctoral Research Fellow, *University of California at Santa Barbara*, 2001–2006

Awards

- Fellow, *American Physical Society*, elected 2016
- LPC Distinguished Researcher, *Fermi National Accelerator Laboratory*, 2016

Education

- Ph.D. in Physics, *University of California, Davis, USA*, 2001
- M.S. in Physics, *University of California, Davis, USA*, 1998
- A.B. in Physics and Philosophy, *Dartmouth College, USA*, 1994

Research

I am an experimental high energy physicist. My research aims to understand the fundamental constituents of matter and their interactions. I am a leading member of one of the premier high energy physics experiments in the world, the CMS experiment, where I study the energy frontier with proton-proton collisions provided by the LHC at CERN (Geneva, Switzerland). On July 4, 2012 my collaborators and I announced the discovery of the Higgs boson, a new type of fundamental particle that is believed to be responsible for the origin of mass. I am also an original proponent and co-spokeperson of *milliQan*, a newer LHC experiment that is performing a dedicated search for milli-charged particles. The success of this experiment has prompted me (and others) to propose several complementary "milliQan-like" experiments around the globe (e.g. FerMINI at FNAL, SUBMET at JPARC, FORMOSA at CERN FPF)

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Selected Professional Activities:

- US CMS HL-LHC Project Scientist *(2016–)*
- milliQan co-spokesperson *(2015–)*
- US CMS HL-LHC Tracker PM *(2015–2016)*
- CMS Deputy Physics Coordinator *(2012–2014)*
- CMS Exotica group convener *(2010–2012)*
- CMS V+jets group convener *(2008–2009)*
- CDF Silicon Detector Project Leader *(2001–2002)*

Selected Talks:

- "milliQan and potential connection with the FPF", Forward Physics Facility - Kickoff Meeting, Nov 9, 2020.
- "Long lived particle searches: Experimental perspective", Snowmass 2021 - EF9 Meeting, June 12, 2020.
- "Search for new physics with disappearing tracks", Lake Louise Winter Institute 2020, CA, Feb 10, 2020.
- "Status of the milliQan Experiment", Lepton-Photon 2019, Toronto, CA, August 6, 2019.
- "The Status of milliQan", 25th Rencontres du Vietnam, Quy Nhon, Vietnam, August 9, 2018.
- "The milliQan Experiment", TeVPa, The Ohio State University, Columbus, OH, August 11, 2017.
- "The Case and Plan for 3/ab"m SEARCH 2016 Workshop, Oxford, UK, Sep. 2, 2016.
- "Disappearing Tracks and other Tricky Experimental Signatures", Perimeter Institute, CA, Apr. 21, 2015.
- "The Hunt for the Higgs: Has the Origin of Mass Been Found?", AAAS Meeting, Boston, MA, Feb, 2013.
- "The Discovery of the Higgs Boson", Colloquium, The Ohio State University, Columbus, OH, Aug. 2012.

Selected Publications:

1. *"Search for long-lived particles decaying to leptons with large impact parameter in proton-proton collisions at* $\sqrt{s} = 13$ *TeV,"* A. Tumasyan *et al.* [CMS] Eur. Phys. J. C **82**, no.2, 153 (2022)
2. *"Sensitivity to millicharged particles in future proton-proton collisions at the LHC with the milliQan detector,"* A. Ball *et al.* [milliQan Collaboration] Phys. Rev. D **104**, no.3, 032002 (2021)
3. it"Search for millicharged particles in proton-proton collisions at $\sqrt{s} = 13$ TeV," A. Ball *et al.* [milliQan Collaboration]. Phys. Rev. D **102**, no.3, 032002 (2020)
4. *"Search for disappearing tracks in proton-proton collisions at* $\sqrt{s} = 13$ *TeV,"* A. M. Sirunyan *et al.* [CMS Collaboration]. Phys. Lett. B **806**, 135502 (2020)
5. *"Search for disappearing tracks as a signature of new long-lived particles in proton-proton collisions at* $\sqrt{s} =$ *13 TeV"* A. M. Sirunyan *et al.* [CMS Collaboration] JHEP **1808**, 016 (2018)
6. *"Search for decays of stopped exotic long-lived particles produced in proton-proton collisions at* $\sqrt{s} = 13$ *TeV"* A. M. Sirunyan *et al.* [CMS Collaboration] JHEP **1805**, 127 (2018)
7. *"Searching for long-lived particles beyond the Standard Model at the Large Hadron Collider,"* J. Alimena *et al.*, [CERN LLP Working Group] J. Phys. G **47**, no.9, 090501 (2020)
8. *"Looking for milli-charged particles with a new experiment at the LHC"* A. Haas, C. S. Hill, E. Izaguirre and I. Yavin. Phys. Lett. B **746**, 117 (2015)
9. *"Search for Displaced Supersymmetry in events with an electron and a muon with large impact parameters"* V. Khachatryan *et al.* [CMS Collaboration] Phys. Rev. Lett. **114** 061801 (2015)
10. *"Beyond Simplified Models: Constraining Supersymmetry on Triangles"* A. Anandakrishnan and C. S. Hill. Phys. Lett. B **735** 412 (2014)