

JOHN PAUL CHOU
CURRICULUM VITAE

Rutgers University
Department of Physics and Astronomy
136 Frelinghuysen Rd
Piscataway, NJ 08854
johnpaul@physics.rutgers.edu

BORN
Buenos Aires, Argentina

EDUCATION

Harvard University

Ph.D. in Physics, September 2008; Advisor, Melissa Franklin
A.M. in Physics, May 2005

Princeton University

A.B. *cum laude* in Physics, May 2002

POSITIONS

Rutgers University

Associate Professor, 2017–present
Assistant Professor, 2011–2017

Brown University

Research Associate, 2008–2011

RESEARCH INTERESTS

CMS Experiment, 2008–present
CDF Experiment, 2003–2011

GRANTS & AWARDS

- Rutgers Board of Trustees Research Fellowship for Scholarly Excellence, 2017
- Rutgers SPS Outstanding Teacher Award, 2015
- Alfred P. Sloan Research Fellowship, 2014–2016
- LHC Physics Center Distinguished Researcher, 2014
- NSF Grant PHY-1607096 (co-PI), 2016–present
- NSF Grant PHY-1306801 (co-PI), 2014–2016
- NSF Grant PHY-1305873 (PI), 2013–2014
- LHC Physics Center Guest and Visitors Program, 2013
- LHC Physics Center Junior Fellowship, 2011
- Kusaka Memorial Prize in Physics, Princeton University, 2002
- Sigma Xi Society, Princeton University, 2002

TEACHING

Lecturer, Rutgers University

- Physics 124: Analytical Physics Ib (S15, S16, S17, S19)
- Physics 273: Honors Physics III, Modern Physics (F12, F16, F17, F18)
- Physics 418: Nuclei and Particles (S12, S13)
- Physics 693: Advanced Topics in High Energy Physics (F15, S18)

Teaching Fellow, Harvard University

- Physics 145: Elementary Particle Physics (S04)

SERVICE

Rutgers University

- Graduate Admissions Committee, 2014–present
- Graduate Recruiting Committee, 2011–2013, 2016–present
- GSO Faculty Liason, 2011–2012, 2016–present
- Conference Committee, 2012–2013, 2015–present
- Committee On New Direction Of Research, 2017

CMS Experiment

- HCAL Detector Performance Group Convener, 2015–2017
- Organizer of CMS Exotica Workshop at CIEMAT, Madrid, Spain, Nov. 2014
- Exotica Physics Convener, 2013–2014
- Principal Organizer of CMS Exotica Workshop at Princeton Center for Theoretical Science, Princeton, NJ, Nov. 2013
- Statistics Committee Member, 2012
- Exotica Non-Hadronic Subgroup Convener, 2011–2012

Other Professional

- Journal Referee for European Physical Review D
- Journal Referee for European Physics Journal C
- Organizer of the Dark Interactions Workshop, Brookhaven National Lab, Brookhaven, NY, October 2018
- Lecturer at the African School of Fundamental Physics and Applications, University of Rwanda, Kigali Rwanda (Aug. 2016)
- Reviewer for Particle Data Group 2016
- Organizer of the Dark Interactions Workshop, Brookhaven National Lab, Brookhaven, NY, October 2016
- Lecturer at the African School of Fundamental Physics and Applications, Cheikh Anta Diop University, Dakar, Senegal (Aug. 2014)
- Organizer of the Workshop on Dark Vector Boson Searches, Brookhaven National Lab, Brookhaven, NY, June 2014
- CMS Data Analysis School (Jan. 2014)
- Organizer of the Higgs Portal Workshop, UMass, Amherst, MA, May 2014
- Principal Organizer of the Workshop on Exotic Top Partners at Fermilab, Batavia, IL, Sept. 2013
- CMS Data Analysis School (Jan. 2011)
- LPC Topic of the Week Committee, 2009–2011 (chair 2010–2011)

SIGNIFICANT PAPERS

Primary (Co-)Author

- CMS Experiment, “A search for physics beyond the standard model is performed using a sample of high-mass diphoton events produced in proton-proton collisions at $\sqrt{s} = 13$ TeV,” submitted to PRD.
- CMS Experiment, “Search for pair-produced resonances each decaying into at least four quarks in proton-proton collisions at $\sqrt{s}=13$ TeV,” submitted to PRL.
- Chou, J.P., Curtin D., Lubatti H., “New Detectors to Explore the Lifetime Frontier,” arXiv:1606.06298, *Phys. Lett. B*, 767 (2016) 29.
- CMS Experiment, “Search for Narrow Resonances Decaying to Dijets in Proton-Proton Collisions at $\sqrt{s}=13$ TeV” *Phys. Rev. Lett.* 116 (2016) 071801.

- CMS Experiment, “Search for jet extinction in the inclusive jet-pt spectrum from proton-proton collisions at $\sqrt{s} = 8$ TeV,” *Phys. Rev. D* 90 (2014) 032005.
- CMS Experiment, “Search for narrow resonances and quantum black holes in inclusive and b-tagged dijet mass spectra from pp collisions at $\sqrt{s}=7$ TeV,” *JHEP* 01 (2013) 013.
- CMS Experiment, “Search for supersymmetry in events with photons and low missing transverse energy in pp collisions at $\sqrt{s}= 7$ TeV,” *Phys. Lett. B* 719 (2013) 42.
- CMS Experiment, “Performance of b tagging at $\sqrt{s} = 8$ TeV in multijet, ttbar, and boosted topology events,” CMS Physics Analysis Summary BTV-13-001.
- CDF Experiment, “Observation of the Production of a W Boson in Association with a Single Charm Quark,” *Phys. Rev. Lett.* 110 (2013) 071801.
- CMS Experiment, “Search for Dark Matter and Large Extra Dimensions in pp Collisions Yielding a Photon and Missing Transverse Energy,” *Phys. Rev. Lett.* 108 (2012) 261803.
- CMS Experiment, “Search for signatures of extra dimensions in the diphoton mass spectrum at the Large Hadron Collider,” *Phys. Rev. Lett.* 108 (2012) 111801.
- CMS Experiment, “Search for Resonances in the Dijet Mass Spectrum from 7 TeV pp Collisions at CMS,” *Phys. Lett. B* 704 (2011) 123.
- CMS Experiment, “Search for Large Extra Dimensions in the Diphoton Final State at the Large Hadron Collider,” *JHEP* 05 (2011) 085.
- CMS Experiment, “Identification and Filtering of Uncharacteristic Noise in the CMS Hadron Calorimeter,” *JINST* 5 (2010) T03014.
- CDF Experiment, “Exclusion of an Exotic Top Quark with $-4/3$ Electric Charge Using Soft Lepton Tagging,” *Phys. Rev. Lett.* 105 (2010) 101801.
- CDF Experiment, “Measurement of the ttbar Production Cross Section in ppbar Collisions at $\sqrt{s}=1.96$ TeV using Soft Electron b-Tagging,” *Phys. Rev. D* 81 (2010) 092002.

Contributing Author

- CMS Experiment, “Search for large extra dimensions and contact interactions in the dilepton mass spectra from pp collisions at $\sqrt{s}=13$ TeV,” in preparation.
- J.P. Chou, N. Craig, P. Draper, D. Egana-Ugrinovic, et al, “Pseudo-Axion Signatures of Anomalous Sigma Models,” in preparation.
- CMS Experiment, “Search for narrow resonances in dijet final states at $\sqrt{s}=8$ TeV with the novel CMS technique of data scouting”, *Phys. Rev. Lett.* 117 (2016) 031802.
- D. Abercrombie, et al, “Dark Matter Benchmark Models for Early LHC Run-2 Searches: Report of the ATLAS/CMS Dark Matter Forum,” arXiv:1507.00966.
- CMS Experiment, “Search for heavy resonances decaying to two Higgs bosons in final states containing four b quarks”, *Eur. Phys. J. C.* 76 (2016) 7.
- CMS Experiment, “Search for pair-produced vectorlike B quarks in proton-proton collisions at $\sqrt{s}=8$ TeV,” *Phys. Rev. D* 93 (2016) 112009.
- CMS Collaboration, “Search for vector-like T quarks decaying to top quarks and Higgs bosons in the all-hadronic channel using jet substructure,” *JHEP* 06 (2015) 080.
- CMS Experiment, “Search for stealth supersymmetry in events with jets, either photons or leptons, and low missing transverse momentum in pp collisions at 8 TeV,” *Phys. Lett. B* 743 (2015) 503.
- CMS Experiment, “Search for pair-produced resonances decaying to jet pairs in proton-proton collisions at $\sqrt{s}= 8$ TeV,” *Phys. Lett. B* 747 (2015) 98.

- CMS Experiment, “Searches for light- and heavy-flavour three-jet resonances in pp collisions at $\sqrt{s} = 8$ TeV,” *Phys. Lett. B* 730 (2014) 193.
- CMS Experiment, “Search for narrow resonances using the dijet mass spectrum in pp collisions at $\sqrt{s} = 8$ TeV,” *Phys. Rev. D* 87 (2013) 114015.
- CMS Experiment, “Search for Anomalous Production of Multilepton Events in pp Collisions at $\sqrt{s}=7$ TeV,” *JHEP* 06 (2012) 169.

Convener/Analysis Review Committee

- CMS Experiment, “Search for dark matter produced in association with a Higgs boson decaying to $\gamma\gamma$ or $\tau^+ \tau^-$ at $\sqrt{s}=13$ TeV,” submitted to JHEP.
- CMS Experiment, “Search for long-lived particles that decay into final states containing two electrons or two muons in proton-proton collisions at $\sqrt{s} = 8$ TeV,” *Phys. Rev. D* 91 (2015) 052012.
- CMS Experiment, “Search for long-lived neutral particles decaying to quark-antiquark pairs in proton-proton collisions at $\sqrt{s} = 8$ TeV,” *Phys. Rev. D* 91 (2015) 012007.
- CMS Experiment, “Search for disappearing tracks in proton-proton collisions at $\sqrt{s} = 8$ TeV,” *JHEP* 01 (2015) 096.
- CMS Experiment, “Search for quark contact interactions and extra spatial dimensions using dijet angular distributions in proton-proton collisions at $\sqrt{s} = 8$ TeV,” *Phys. Lett. B* 746 (2015) 79.
- CMS Experiment, “Search for new phenomena in monophoton final states in proton-proton collisions at $\sqrt{s} = 8$ TeV,” *Phys. Lett. B* 755 (2016) 102.
- CMS Experiment, “Search for dark matter, extra dimensions, and unparticles in monojet events in proton-proton collisions at $\sqrt{s} = 8$ TeV,” *Eur. Phys. J. C* 75 (2015) 235.
- CMS Experiment, “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,” *Phys. Rev. D* 91 (2015) 092005.
- CMS Experiment, “Search for new resonances decaying via WZ to leptons in proton-proton collisions at $\sqrt{s} = 8$ TeV,” *Phys. Lett. B* 740 (2015) 83.
- CMS Experiment, “Search for pair production of third-generation scalar leptoquarks and top squarks in proton-proton collisions at $\sqrt{s} = 8$ TeV,” *Phys. Lett. B* 739 (2014) 229.
- CMS Experiment, “Search for heavy neutrinos and W bosons with right-handed couplings in proton-proton collisions at $\sqrt{s} = 8$ TeV,” *Eur. Phys. J. C* 74 (2014) 3149.
- CMS Experiment, “Search for excited quarks in the photon+jet final state in proton-proton collisions at $\sqrt{s} = 8$ TeV,” *Phys. Lett. B* 738 (2014) 274.
- CMS Experiment, “Search for baryon number violation in top-quark decays,” *Phys. Lett. B* 731 (2014) 173.
- CMS Experiment, “Search for massive resonances decaying into pairs of boosted bosons in semi-leptonic final states at $\sqrt{s} = 8$ TeV,” *JHEP* 08 (2014) 174.
- CMS Experiment, “Search for massive resonances in dijet systems containing jets tagged as W or Z boson decays in pp collisions at $\sqrt{s} = 8$ TeV,” *JHEP* 08 (2014) 173.
- CMS Experiment, “Search for microscopic black holes in pp collisions at $\sqrt{s} = 8$ TeV,” *JHEP* 07 (2013) 178.
- CMS Experiment, “Searches for long-lived charged particles in pp collisions at $\sqrt{s} = 7$ and 8 TeV,” *JHEP* 07 (2013) 122.

- CMS Experiment, “Search for heavy narrow dilepton resonances in pp collisions at $\sqrt{s} = 7$ TeV and $\sqrt{s} = 8$ TeV,” *Phys. Lett. B* 720 (2013) 63.
- CMS Experiment, “Search for new physics in final states with a lepton and missing transverse energy in pp collisions at the LHC,” *Phys. Rev. D* 87 (2013) 072005
- CMS Experiment, “Measurement of the top-antitop production cross section in the tau+jets channel in pp collisions at $\sqrt{s} = 7$ TeV,” *Eur. Phys. J. C* 73 (2013) 2386.
- CMS Experiment, “Search for pair-produced dijet resonances in four-jet final states in pp collisions at $\sqrt{s} = 7$ TeV,” *Phys. Rev. Lett.* 110 (2013) 141802.
- CMS Experiment, “Search for new physics in events with photons, jets, and missing transverse energy in pp collisions at $\sqrt{s} = 7$ TeV,” *JHEP* 03 (2013) 111.
- CMS Experiment, “Search for contact interactions in opposite-sign dimuon events in pp collisions at $\sqrt{s} = 7$ TeV,” *Phys. Rev. D* 87 (2013) 032001.
- CMS Experiment, “Search for a non-standard-model Higgs boson decaying to a pair of new light bosons in four-muon final states,” *Phys. Lett. B* 726 (2013) 564.
- CMS Experiment, “Search for heavy lepton partners of neutrinos in proton-proton collisions in the context of the type III seesaw mechanism,” *Phys. Lett. B* 718 (2012) 348.
- CMS Experiment, “Search for a W' or techni-rho decaying into WZ in pp collisions at $\sqrt{s} = 7$ TeV,” *Phys. Rev. Lett.* 109 (2012) 141801.
- CMS Experiment, “Search for leptonic decays of W' bosons in pp collisions at $\sqrt{s} = 7$ TeV,” *JHEP* 08 (2012) 023.
- CMS Experiment, “Search for large extra dimensions in dimuon and dielectron events in pp collisions at $\sqrt{s} = 7$ TeV,” *Phys. Lett. B* 711 (2012) 15.
- CMS Experiment, “Measurement of the Top-antitop Production Cross Section in pp Collisions at $\sqrt{s}=7$ TeV using the Kinematic Properties of Events with Leptons and Jets,” *Eur. Phys. J. C* 9 (2011) 1721.

TALKS

Invited, Keynote, and Plenary Addresses

- “MATHUSLA” at *Searches for long-lived particles at the LHC: Workshop of the LHC LLP Community* (Apr. 2017), CERN, Switzerland
- “Experimental Exotics” at *Digging Deeper: PITT PACC Workshop* (Feb. 2017), Pittsburgh, PA
- “Prospects for Higgs decays to Ultra-long-lived particles” at *Exotic Higgs Decay Meeting* (Nov. 2016), SLAC, Menlo Park, CA
- “Unconventional Signatures” at *Strategy Workshop on High-Energy Particle Physics in Switzerland* (June 2016), Unterägeri, Switzerland
- “Two photon results from CMS” at *New Physics Interpretations at the LHC* (May 2016), Argonne National Lab, Lemont, IL
- “CMS” at the *Hidden Naturalness Workshop* (April 2016), College Park, MD
- “New physics in final states with light SM particles CMS” at *Rencontres de Moriond QCD* (Mar. 2016), La Thuile, Italy
- “Latest Developments from CMS” at *Brookhaven Forum 2015: Great Expectations, a New Chapter* (Oct. 2015), Brookhaven National Lab, Brookhaven, NY
- “New Physics from CMS: Hints from Run 1 and Prospects for Run 2” at *Mitchell Workshop on Collider and Dark Matter Physics* (May 2015), Texas A&M University, College Station, TX

- “Searches for Exotic Phenomena” at *International Committee for Future Accelerators Seminar* (Oct. 2014), IHEP, Beijing, China
- “Searches for Hidden Valleys at CMS” at *Dark Interactions: Perspectives from Theory and Experiment* (Jun. 2014), Brookhaven National Lab, Brookhaven, NY
- “Status of CMS Exotica Results” at *Mitchell Workshop on Collider and Dark Matter Physics* (May 2014), Texas A&M University, College Station, TX
- “Results on Searches for Exotica” at the *International Symposium on Higgs Boson Physics* (Aug. 2013), IHEP, Beijing, China
- “Searches for Exotica at the LHC” at *Rencontres de Moriond QCD* (Mar. 2013), La Thuile, Italy
- “Recent Results from the CMS Experiment” at *Tools 2012 Workshop* (Jun. 2012), Stockholm, Sweden
- “Status and Outlook of Beyond the Standard Model physics with photons at the LHC” at *Chicago 2012 Workshop on LHC Physics* (May 2012), Chicago, IL
- “Recent Dark Matter Limits from CDF and CMS” at *Dark Matter in Collision Workshop* (Apr. 2012), Davis, CA
- “Hard QCD Results with Jets and Photons at the Tevatron” at *Hadron Collider Physics Symposium 2011* (Nov. 2011), Paris, France
- “Physics Results from Recent Data and Prospects for New Physics Searches at CMS” at *PPC2010: Fourth International Workshop on the Interconnection between Particle Physics and Cosmology* (Jul. 2010), Torino, Italy

Other Talks, Seminars, and Colloquia

- “Wine and Cheese” Seminar at Fermilab, Batavia, IL (Oct. 2018)
- Colloquium at University of Maryland, College Park, MD (Feb. 2018)
- Seminar at University of Maryland, College Park, MD (Apr. 2017)
- Colloquium at Rutgers University, Piscataway, NJ (Sept. 2016)
- Seminar at University of Pennsylvania, Philadelphia, PA (Apr. 2015)
- Seminar at LBNL, Berkeley, CA (Mar. 2015)
- “Wine and Cheese” Seminar at Fermilab, Batavia, IL (Jan. 2015)
- Seminar at IHEP, Beijing, China (Nov. 2014)
- Seminar at LPC Physics Forum, Fermilab, Batavia, IL (Feb. 2014)
- Outreach talk at East Brunswick High School, NJ (Feb. 2012)
- Outreach talk for Society of Physics Students at Rutgers University (Nov. 2011)
- Seminar for Graduate Students at Rutgers University (Nov. 2011, Oct. 2012, Jan. 2014)
- Colloquium at University of Louisville (Mar. 2011), Louisville, KY
- Seminar at Rutgers University (Feb. 2011)

GRADUATE STUDENTS

Steffie Ann Thayil, anticipated Ph.D. 2021
 Brandon Chiarito, anticipated Ph.D. 2020
 Elliot “Tote” Hughes, Ph.D. July 2018
 Steven Kaplan, Ph.D. September 2017

POSTDOCTORAL ADVISEES

Dinko Ferencek (2011–2015)
 Antonios Agapitos (2016–2018)