

Curriculum Vitae Duncan L. Carlsmith

Contact information: Dept. of Physics, 1150 University Ave, Madison, WI 53706
(608) 262-2485 (WI office), (608) 263-0800 (WI FAX), +41 79 233 34 98 (Swiss mobile)
duncan@hep.wisc.edu, <http://www.physics.wisc.edu/people/faculty/carlsmith>

Personal information: Born 1957, Nashua, N.H., two children.

Education: U. of Chicago - M.S. Physics (1980); Ph.D. Physics (1984). Yale U. - B.S. Physics, Mathematics (1979), cum laude. Richmond College, Richmond, Surrey, England (1974-5).

Employment: 1999-present, Full Professor, UW-Madison; Fall 2008 Sabbatical leave at CERN, Geneva, Switzerland. 1993-99, Associate Professor, UW-Madison; 1987-93, Assistant Professor, UW-Madison; 1984-87, Project Associate, UW-Madison; 1980-84, Research Assistant, U. of Chicago

Elementary particle physics research: pp -collisions at 7 TeV, CERN Large Hadron Collider (LHC), Compact Muon Solenoid (CMS) Collaboration, 1994-present (cms.web.cern.ch). $p\bar{p}$ collisions at 2 TeV at the Fermilab Tevatron, Collider Detector Facility (CDF), 1984-2014 (www-cdf.fnal.gov). Superconducting Super Collider Subsystem R & D at SSCL, Solenoidal Detector Collaboration (SDC), 1986-1991 (www.hep.net/ssc), 1991-93. Neutral kaon physics, Fermilab Experiment E617, 1980-84. Physics research Grants and Contracts as Principal Investigator funded by DoE (DE-AC0276ER00881).

Educational innovation: Video-based learning objects for physics undergraduate labs, Flexible Physics for the Google World, 2011-12, (flexible.physics.wisc.edu/), and Flexible Physics Mobile, 2013-14. Makerspaces and sustainability initiative, WI Make Sustain, 2013-14. Education research funded by The Graduate School, UW-Madison. Garage Physics lab for undergraduate research and entrepreneurship, 2013-, funded by Physics Dept. Board of Visitors Fund for Undergraduate Research.

Muon tomography research: Molecular Archaeology Group Scientific Advisory Group, expedition to Troy (2012-), UW Graduate School.

Journal Publications: A list of journal publications with D. Carlsmith as co-author is available at usparc.ihep.su/spires/find/hep/wwwcite?rawcmd=FINN+author+carlsmith or scholar.google.com/citations?user=_5j9q7MAAAAJ

Books: Duncan Carlsmith, *Particle Physics*, Addison-Wesley (2013), ISBN-13: 978-0-321-67689-4. A 575 page graduate level textbook.

<http://www.pearsonhighered.com/educator/product/Particle-Physics/9780321676894.page>

Prizes: EPS HEPP Prize 2013, to the CMS and ATLAS collaborations for the discovery of a Higgs boson as predicted by the Brout-Englert-Higgs mechanism.

University of Wisconsin teaching: Physics 103: General Physics I[†](1997), Physics 104: General Physics II[†](1998), Physics 107: Ideas of Modern Physics (1999, 2000-04, 2010), Physics 201: General Physics I* (1994, 1997, 2001, 2006), Physics 202: General Physics II*(1989, 1996, 2012), Physics 205: Modern Physics for Engineers (2009), Physics 207: General Physics I**(1995, 2000), Physics 208: General Physics II**(2001, 2009), Physics 241: Modern Physics (2005), Physics 244: Modern Physics (primarily ECE majors) (2007, 2008), Physics 247: A Modern Introduction to Physics I[°](2010), 2012, Physics 248: A Modern Introduction to Physics II[°](2011, 2013), Physics 249: A Modern Introduction to Physics III[°](2011, 2013), Physics 299: Directed Study[°] (1991, 2009, 2010), Physics 301:

Physics Today^{††} (1991,1993,1995,1997), Physics 307: Intermediate Laboratory^{††} (1994), Physics 311: Classical Mechanics^{††} (1989, 1990, 1995, 2007), Physics 321: Wave Motion and Optics^{††}(1993), Physics 322: Electromagnetic Fields^{††} (1988, 1992, 2002), Physics 415: Thermal Physics^{††} (1991), Physics 531: Introduction to Quantum Mechanics^{††} (1989, 1993, 1996), Physics 535: Elementary Particle Physics[#] (1988,1990,1992,1998, 2004, 2005, 2006), Physics 601: Scientific Presentation[#] (1994), Physics 990: Research in Physics[#] (1989-present), ECE 379: WI Make Sustainability (2013-14)

See www.physics.wisc.edu/academic/undergrads/course-descriptions for course descriptions.

† non-calculus for biologists, * calculus for engineers, ** calculus for biologists, ° accelerated for physics and astronomy majors, †† physics majors, # graduate level

College of Letters and Sciences and University Committees: Faculty Advising Service (1989-92,1993-8), Letters and Science Advising Center (2006), Faculty Senate (1990-1995, 2004-present), Senate alternate (2001-2004), Honors Fellow (1994-7), Faculty Honors Committee (1995-97), Honors Faculty Mentor (1995), Physical Sciences Division Fellowships Committee (1996-8, 2000-4, 2006, 2007 [chair]), Wisconsin Space Grant Advisor (1995-2006), Hilldale Awards (2005), UW Madison Bouchet Selection Committee (2010-12), General Education Requirements Committee (2011-), Graduate Faculty Executive Committee (2012-14, [elected]), UW Teaching Academy Fellow (2012-).

Department of Physics Committees: Physics Council (1997-2001), Ombudsperson (2005), Electronic Shop (2005), Nominating (1988-89), Introductory Courses, Labs, Lecture Rooms (1997, 2010, 2011[chair], 2012, 2013), Intermediate and Advanced Courses (1989-90, 94), Mentor (1987-95), Honors (1989-2004, 2006), Preliminary Exam (1989-90, 2006, 2013), Awards (1989-94,2001), High Energy Advisor (1989-90), Physics Advisor Soph/Fresh (1998-2004, 2005), Physics Advisor Juniors (1998-2005), Physics Advisor Individual Majors(2001-2), Qualifying Exam (1989,1998,1999, 2000, 2001), Introductory Seminar (1989-92), Graduate Admissions and Fellowships (1989-90, 1995, 1996 [chair]), (199, 2003, 2004, 2007(chair)), Degree Audit Record System Representative (1997-2006), Research Capital (1997-8 [chair]), Faculty Minority Liaison(1998-?), TA Policy and Review (2001, 2009 [chair], 2010-12), Salaries(2001), Climate and Diversity (2007 [originator and chair]), Physics certificate (2007 [originator]), Computing (2007), Student Awards (2010), Physics Learning Center Oversight Committee (2011), Garage Physics (2013- [originator]). General Education Committee (2013) Advisors: Innovation and Garage Physics [originator] (2013) Alumni Relations and Board of Visitors (2013)

Professional Organizations: American Physical Society (1984-), American Association of Physics Teachers (07-) IEEE member (1987-1995), Referee for DoE High Energy Physics Proposals, USCMS election Committee (08-09), LHC Users Organization candidate for Executive Committee 08-09, Advances in High Energy Physics editor (10-), National Society of Black Physicists (09-), Yale Alumni Schools Committee (2009-), Journal of Modern Physics and Applications (JMPA) editor (2012-), American Journal of Physics editor (2013-).

Recent outreach: National Society of Black Physicists and National Society of Hispanic Physicists Annual Meeting, Austin (2011), escort and recruiter. Madison Rotary Club, “The Large Hadron Collider at CERN,” Apr 2009. Rotary Club of Madison, “The Large Hadron Collider: A fantastic experiment,” Feb 2010., WYOU TV Newsdesk with Jason Miller, “The Higgs Boson Particle, The God Particle, CERN, Dark Matter,” Aug. 2012, judge for the 2013 WARF Interdisciplinary Discovery Challenge Research Symposium, Center for Technology Commercialization/Wisconsin Entrepreneurs Network reviewer.

References

- [1] S. Chatrchyan *et al.* [CMS Collaboration], “Searches for anomalous $t\bar{t}$ production in pp collisions at $\sqrt{s}=8$ TeV,” Phys. Rev. Lett. **111**, 211804 (2013) [arXiv:1309.2030 [hep-ex]].
- [2] S. Chatrchyan *et al.* [CMS Collaboration], “Measurement of the production cross section for $Z\gamma \rightarrow \nu\bar{\nu}\gamma$ in pp collisions at $\sqrt{s} = 7$ TeV and limits on $ZZ\gamma$ and $Z\gamma\gamma$ triple gauge boson couplings,” JHEP **1310**, 164 (2013) [arXiv:1309.1117 [hep-ex]].
- [3] S. Chatrchyan *et al.* [CMS Collaboration], “Search for a new bottomonium state decaying to $\Upsilon(1S)\pi^+\pi^-$ in pp collisions at $\sqrt{s} = 8$ TeV,” Phys. Lett. B **727**, 57 (2013) [arXiv:1309.0250 [hep-ex]].
- [4] S. Chatrchyan *et al.* [CMS Collaboration], “Measurement of the $W\gamma$ and $Z\gamma$ inclusive cross sections in pp collisions at $\sqrt{s} = 7$ TeV and limits on anomalous triple gauge boson couplings,” arXiv:1308.6832 [hep-ex].
- [5] T. A. Aaltonen *et al.* [CDF Collaboration], “A Direct Measurement of the Total Decay Width of the Top Quark,” Phys. Rev. Lett. [Phys. Rev. Lett. **111**, 202001 (2013)] [arXiv:1308.4050 [hep-ex]].
- [6] S. Chatrchyan *et al.* [CMS Collaboration], “Measurement of the W-boson helicity in top-quark decays from $t\bar{t}$ production in lepton+jets events in pp collisions at $\sqrt{s} = 7$ TeV,” JHEP **1310**, 167 (2013) [arXiv:1308.3879 [hep-ex]].
- [7] S. Chatrchyan *et al.* [CMS Collaboration], “Angular analysis and branching fraction measurement of the decay $B^0 \rightarrow K^{*0}\mu^+\mu^-$,” Phys. Lett. B **727**, 77 (2013) [arXiv:1308.3409 [hep-ex]].
- [8] T. Aaltonen *et al.* [CDF Collaboration], “Production of K_S^0 , $K^{*\pm}(892)$ and $\phi^0(1020)$ in minimum bias events and K_S^0 and Λ^0 in jets in $p\bar{p}$ collisions at $\sqrt{s} = 1.96$ TeV,” arXiv:1308.3371 [hep-ex].
- [9] T. A. Aaltonen *et al.* [CDF Collaboration], “Evidence for a bottom baryon resonance Λ_{cb}^* in CDF data,” Phys. Rev. D **88**, 071101 (2013) [arXiv:1308.1760 [hep-ex]].
- [10] S. Chatrchyan *et al.* [CMS Collaboration], “Search for top-squark pair production in the single-lepton final state in pp collisions at $\sqrt{s} = 8$ TeV,” arXiv:1308.1586 [hep-ex].
- [11] T. A. Aaltonen *et al.* [CDF Collaboration], “Measurement of the leptonic asymmetry in $t\bar{t}$ events produced in $p\bar{p}$ collisions at $\sqrt{s} = 1.96$ TeV,” Phys. Rev. D **88**, 072003 (2013) [arXiv:1308.1120 [hep-ex]].
- [12] T. A. Aaltonen *et al.* [CDF and D0 Collaborations], “Combination of CDF and D0 W-Boson Mass Measurements,” Phys. Rev. D **88**, 052018 (2013) [arXiv:1307.7627 [hep-ex]].
- [13] S. Chatrchyan *et al.* [CMS Collaboration], “Measurement of the prompt J/psi and psi(2S) polarizations in pp collisions at $\sqrt{s} = 7$ TeV,” Phys. Lett. B **727**, 381 (2013) [arXiv:1307.6070 [hep-ex]].

- [14] S. Chatrchyan *et al.* [CMS Collaboration], “Search for a Higgs boson decaying into a Z and a photon in pp collisions at $\sqrt{s} = 7$ and 8 TeV,” Phys. Lett. B **726**, 587 (2013) [arXiv:1307.5515 [hep-ex]].
- [15] S. Chatrchyan *et al.* [CMS Collaboration], “Measurement of the B(s) to mu+ mu- branching fraction and search for B0 to mu+ mu- with the CMS Experiment,” Phys. Rev. Lett. **111**, 101804 (2013) [arXiv:1307.5025 [hep-ex]].
- [16] S. Chatrchyan *et al.* [CMS Collaboration], “Measurement of the top-quark mass in all-jets $t\bar{t}$ events in pp collisions at $\sqrt{s}=7$ TeV,” arXiv:1307.4617 [hep-ex].
- [17] S. Chatrchyan *et al.* [CMS Collaboration], “Study of the production of charged pions, kaons, and protons in pPb collisions at $\sqrt{s_{NN}} = 5.02$ TeV,” arXiv:1307.3442 [hep-ex].
- [18] S. Chatrchyan *et al.* [CMS Collaboration], “Determination of the top-quark pole mass and strong coupling constant from the $t\bar{t}$ production cross section in pp collisions at $\sqrt{s} = 7$ TeV,” arXiv:1307.1907 [hep-ex].
- [19] T. Aaltonen *et al.* [CDF Collaboration], “Indirect measurement of $\sin^2\theta_W (M_W)$ using e+e- pairs in the Z-boson region with $p\bar{p}$ collisions at a center-of-momentum energy of 1.96 TeV,” Phys. Rev. D **88**, 072002 (2013) [arXiv:1307.0770 [hep-ex]].
- [20] T. Aaltonen *et al.* [CDF Collaboration], “A signature-based search for delayed photons in exclusive photon plus missing transverse energy events from $p\bar{p}$ collisions with $\sqrt{s} = 1.96$ TeV,” Phys. Rev. D **88**, 031103 (2013) [arXiv:1307.0474 [hep-ex]].