

# Curriculum Vitae

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### Education

- Ph. D., Physics, University of California at Berkeley, 1996.
- M. A., Physics, University of California at Berkeley, 1991.
- B. S., Electrical Engineering, National Taiwan University, Taiwan, R.O.C., 1988.

### Academic Experience

- Professor, Department of Physics, University of California, Davis, 2012–present.
- Associate Professor, Department of Physics, University of California, Davis, 2009–2012.
- Assistant Professor, Department of Physics, University of California, Davis, 2005–2009.
- Research Associate, Department of Physics, Harvard University, 2002–2005.
- Research Associate (McCormick Fellow), Enrico Fermi Institute, University of Chicago, 1999–2002.
- Research Associate, Theoretical Physics Department, Fermi National Accelerator Laboratory, 1996–1999.
- Graduate student research assistant, Theoretical Physics Group, Lawrence Berkeley Laboratory, 1993–1996.
- Graduate student instructor, Department of Physics, University of California at Berkeley, 1991–1993.
- Referee for physics journals, *Physical Review Letters*, *Physical Review D*, *Physics Letters B*, *Nuclear Physics B*, *Journal of Cosmology and Astroparticle Physics* and *Journal of High Energy Physics*.
- Grant reviewer for Department of Energy and National Science Foundation.

## Honors

- Outstanding Junior Investigator Award, Department of Energy, 2006-2009.
- Robert R. McCormick Fellowship, University of Chicago, 1999-2001.
- University of California Regents Fellowship, 1992-1993.
- Tse-Wei Liu Memorial Fellowship, University of California, 1990-1991.
- Book Coupon Awards (to the top 5% of the students in each class) 1984–1988; first place (out of 159) upon graduation in Class 88, Department of Electrical Engineering, National Taiwan University.

## List of publications

1. H. C. Cheng, L. Li and E. Salvioni, “A Theory of Dark Pions,” [arXiv:2110.10691 [hep-ph]].
2. H. C. Cheng and Y. Chung, “A More Natural Composite Higgs Model,” JHEP **10**, 175 (2020) doi:10.1007/JHEP10(2020)175 [arXiv:2007.11780 [hep-ph]].
3. H. C. Cheng, L. Li, E. Salvioni and C. B. Verhaaren, “Light Hidden Mesons through the Z Portal,” JHEP **11**, 031 (2019) doi:10.1007/JHEP11(2019)031 [arXiv:1906.02198 [hep-ph]].
4. J. Alimena, J. Beacham, M. Borsato, Y. Cheng, X. Cid Vidal, G. Cottin, A. De Roeck, N. Desai, D. Curtin and J. A. Evans, *et al.* J. Phys. G **47**, no.9, 090501 (2020) doi:10.1088/1361-6471/ab4574 [arXiv:1903.04497 [hep-ex]].
5. “Coscattering/Coannihilation Dark Matter in a Fraternal Twin Higgs Model” H.-C. Cheng, L. Li and R. Zheng, JHEP **1809**, 098 (2018) doi:10.1007/JHEP09(2018)098 [arXiv:1805.12139 [hep-ph]].
6. “Singlet Scalar Top Partners from Accidental Supersymmetry” H.-C. Cheng, L. Li, E. Salvioni and C. B. Verhaaren, JHEP **1805**, 057 (2018) doi:10.1007/JHEP05(2018)057 [arXiv:1803.03651 [hep-ph]].
7. “Constraining the compressed spectrum of the top squark and chargino along the W corridor” H.-C. Cheng, L. Li and Q. Qin, Phys. Rev. D **97**, no. 5, 055043 (2018) doi:10.1103/PhysRevD.97.055043 [arXiv:1711.07596 [hep-ph]].
8. “Compressed Stop Searches with Two Leptons and Two b-jets” H.-C. Cheng, C. Gao and L. Li. J. Phys. G **46**, no. 3, 035004 (2019) doi:10.1088/1361-6471/ab00cb [arXiv:1706.02805 [hep-ph]].
9. “Exotic electroweak signals in the twin Higgs model” H.-C. Cheng, E. Salvioni and Y. Tsai. arXiv:1612.03176 [hep-ph] Phys. Rev. D **95**, no. 11, 115035 (2017)

10. “AMS-02 Positron Excess and Indirect Detection of Three-body Decaying Dark Matter” H.-C. Cheng, W. C. Huang, X. Huang, I. Low, Y. L. S. Tsai and Q. Yuan. arXiv:1608.06382 [hep-ph] JCAP **1703**, no. 03, 041 (2017)
11. “Second Stop and Sbottom Searches with a Stealth Stop” H.-C. Cheng, L. Li and Q. Qin. arXiv:1607.06547 [hep-ph] JHEP **1611**, 181 (2016)
12. “Physics at a 100 TeV pp collider: beyond the Standard Model phenomena” . Golling *et al.*. arXiv:1606.00947 [hep-ph] CERN Yellow Report, no. 3, 441 (2017) CERN-TH-2016-111, FERMILAB-PUB-16-296-T
13. “Stop Search in the Compressed Region via Semileptonic Decays,” H.-C. Cheng, C. Gao, L. Li and N. A. Neill, JHEP **1605**, 036 (2016) [arXiv:1604.00007 [hep-ph]].
14. “Exotic Quarks in Twin Higgs Models,” H.-C. Cheng, S. Jung, E. Salvioni and Y. Tsai, JHEP **1603**, 074 (2016) [arXiv:1512.02647 [hep-ph]].
15. “Same-Sign Dilepton Excesses and Vector-like Quarks,” C.-R. Chen, H.-C. Cheng and I. Low. JHEP **1603**, 098 (2016) arXiv:1511.01452 [hep-ph]
16. “Top seesaw with a custodial symmetry, and the 126 GeV Higgs,” H.-C. Cheng and J. Gu, JHEP **1410**, 002 (2014) [arXiv:1406.6689 [hep-ph]].
17. “Higgs mass from compositeness at a multi-TeV scale,” H.-C. Cheng, B. A. Dobrescu and J. Gu, JHEP **1408**, 095 (2014) [arXiv:1311.5928 [hep-ph]].
18. “A Holographic Model of Heavy-light Mesons,” Y. Bai and H.-C. Cheng, JHEP **1308**, 074 (2013) [arXiv:1306.2944 [hep-ph]].
19. “A Toolkit of the Stop Search via the Chargino Decay,” Y. Bai, H.-C. Cheng, J. Gallicchio and J. Gu, JHEP **1308**, 085 (2013) [arXiv:1304.3148 [hep-ph]].
20. “The case for three-body decaying dark matter,” H.-C. Cheng, W. -C. Huang, I. Low and G. Shaughnessy, JCAP **1301**, 033 (2013) [arXiv:1205.5270 [hep-ph]].
21. “Stop the Top Background of the Stop Search,” Y. Bai, H.-C. Cheng, J. Gallicchio and J. Gu, JHEP **1207**, 110 (2012) [arXiv:1203.4813 [hep-ph]].
22. “Measuring Invisible Particle Masses Using a Single Short Decay Chain,” H.-C. Cheng and J. Gu, JHEP **1110**, 094 (2011) [arXiv:1109.3471 [hep-ph]].
23. “SUSY Hidden in the Continuum,” H. Cai, H.-C. Cheng, A. D. Medina and J. Terning, Phys. Rev. D **85**, 015019 (2012) [arXiv:1108.3574 [hep-ph]].
24. “Simplified Models for LHC New Physics Searches” D. Alves *et al.* [LHC New Physics Working Group Collaboration]. arXiv:1105.2838 [hep-ph] J. Phys. G **39**, 105005 (2012)

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26. “Identifying Dark Matter Event Topologies at the LHC” Y. Bai and H.-C. Cheng *JHEP* **1106**, 021 (2011) [arXiv:1012.1863 [hep-ph]].
27. “Missing Momentum Reconstruction and Spin Measurements at Hadron Colliders,” H.-C. Cheng, Z. Han, I. W. Kim and L. T. Wang *JHEP* **1011**, 122 (2010) [arXiv:1008.0405 [hep-ph]].
28. “Continuum Superpartners” H.-C. Cheng, *Int. J. Mod. Phys.* **A25**, 5210-5221 (2010) [arXiv:1003.1163 [hep-ph]].
29. “2009 TASI Lecture – Introduction to Extra Dimensions” H.-C. Cheng, in “Physics of the Large and the Small,” Proceedings of the Theoretical Advanced Study Institute in Elementary Particle Physics, eds. C. Csaki and S. Dodelson, arXiv:1003.1162 [hep-ph].
30. “Continuum Superpartners from Supersymmetric Unparticles,” H. Cai, H.-C. Cheng, A. D. Medina and J. Terning, *Phys. Rev.* **D80**, 115009 (2009) arXiv:0910.3925 [hep-ph].
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33. “Minimal Kinematic Constraints and MT2,” H.-C. Cheng and Z. Han, *JHEP* **0812**, 063 (2008) arXiv:0810.5178 [hep-ph].
34. “A spin-1 top quark superpartner,” H. Cai, H.-C. Cheng and John Terning, *Phys. Rev. Lett.* **101**, 171805 (2008) arXiv:0806.0386 [hep-ph].
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60. “Bounds on universal extra dimensions,” T. Appelquist, H.-C. Cheng, B. A. Dobrescu, *Phys. Rev.* **D64**, 035002 (2001), arXiv:hep-ph/0012100.
61. “Minimal electroweak symmetry breaking model in extra dimensions,” H.-C. Cheng, presented at The Meeting of The Division of Particles and Fields of The American Physical Society (DPF2000), August 9-12, 2000, The Ohio State University, Columbus, Ohio, arXiv:hep-ph/0011061.
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64. “Report of mSUGRA working group for Run II of the Tevatron,” S. Abel *et al.*, arXiv:hep-ph/0003154.
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66. “New Higgs signals from flavor physics in large extra dimensions,” H.-C. Cheng and K. T. Matchev, *Nucl. Phys.* **B563**, 21 (1999), arXiv:hep-ph/9908328.

67. “Gauge coupling unification with extra dimensions and gravitational scale effects,” H.-C. Cheng, B. A. Dobrescu and C. T. Hill, *Nucl. Phys.* **B573**, 597 (2000), arXiv:hep-ph/9906327.
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73. “Precision SUSY measurements at the  $e^-e^-$  collider,” H.-C. Cheng, presented at 2nd International Workshop on Electron-Electron Interactions at TeV Energies, Sep. 22-24, 1997, University of California, Santa Cruz, arXiv:hep-ph/9801234, Published in *Int. J. Mod. Phys.* **A13**, 2329-2336 (1998), Editor: C. A. Heusch.
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75. “Signatures of multi-TeV scale particles in supersymmetric theories,” H.-C. Cheng, J. L. Feng, and N. Polonsky, *Phys. Rev.* **D57**, 152 (1998), arXiv:hep-ph/9706476.
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85. “Squark and slepton mass relations in grand unified theories,” H.-C. Cheng and L. J. Hall, *Phys. Rev.* **D51**, 5289 (1995), arXiv:hep-ph/9411276.
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