

## CUMULATIVE BIO-BIBLIOGRAPHY

University of California, Santa Cruz, CA

April 4, 2020

Howard E. Haber

Distinguished Professor

Physics Department

Stevenson College

The signature below indicates that the following information is believed to be accurate and the bio-bibliographical information may be released to the public.



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Howard E. Haber

Date

### EMPLOYMENT

1990–present	Professor of Physics, Department of Physics, UC Santa Cruz
1989–1990	Associate Professor of Physics, Department of Physics, UC Santa Cruz
1988–1989	Assistant Professor of Physics, Department of Physics, UC Santa Cruz
1984–1988	Adjunct Assistant Professor of Physics, Department of Physics, UC Santa Cruz
1982–1984	Assistant Research Physicist/Visiting Assistant Professor, UC Santa Cruz
1980–1982	Postdoctoral Research Associate, University of Pennsylvania
1978–1980	Postdoctoral Research Associate, Theoretical Physics Group, Lawrence Berkeley Laboratory
1975–1978	Research Assistant, University of Michigan
1973–1978	Teaching Assistant, University of Michigan

### EDUCATION

Ph.D., Physics	University of Michigan, 1978
S.M., Physics	Massachusetts Institute of Technology, 1973
S.B., Physics	Massachusetts Institute of Technology, 1973
S.B., Math	Massachusetts Institute of Technology, 1973

### ACADEMIC WEB PAGE OF HOWARD E. HABER

<http://scipp.ucsc.edu/~haber/>

## RECENT RESEARCH INTERESTS

The basic themes underlying my research program involve the study of: (i) the dynamics responsible for electroweak symmetry breaking; (ii) the theory and phenomenology of Higgs bosons; (iii) TeV-scale supersymmetry as a framework for incorporating a weakly-coupled Higgs sector; (iv) the phenomenology of signals for new physics beyond the Standard Model at the Large Hadron Collider (LHC) and future colliders; and (v) connections of low-energy phenomena with fundamental scales that lie beyond the TeV scale (e.g. lepton number violation and implications for neutrino masses).

The properties of the Higgs boson, which were discovered in 2012 at the Large Hadron Collider (LHC), have profound implications for the dynamics of electroweak symmetry breaking and the possible structure of new physics that may lie beyond the Standard Model (SM) of particle physics. For example, most approaches to physics beyond the SM include extended Higgs sectors. Present Higgs data suggest that the properties of one of the scalars of the Higgs sector (identified with the observed Higgs boson) must have properties that closely approximate that of the SM Higgs boson. This constraint in turn imposes important constraints on any SM extension. The two-Higgs doublet model (2HDM) is a convenient theoretical laboratory for the study of extended Higgs sectors. Indeed, the two doublet extended Higgs sector is a key component of the simplest supersymmetric extension of the SM.

The theoretical structure and phenomenological profile of the 2HDM has attracted much attention in recent years. Starting with a seminal paper in collaboration with Sacha Davidson published in 2005, my work has advocated the importance of a basis-independent treatment of the 2HDM. During the past few years, I have focused on the relevance of the so-called decoupling and alignment limits of the 2HDM in which one of scalars closely resembles the SM Higgs boson. The basis-independent technology provides a very powerful and simple framework for studying and interpreting these limits.

If new physics beyond the SM emerges at the LHC, it will be essential to develop techniques for measuring new particle interaction strengths at high energy colliders. By detecting relations among various independent couplings, one can ascertain underlying symmetries and distinguish among different theoretical interpretations of the new physics. For example, with sufficient precision, it will be possible to provide convincing evidence for or against a supersymmetric interpretation of new fundamental physics phenomena. A precision Higgs program at the LHC and at a future collider (such as the proposed International Linear Collider) can also provide important clues as to what may lie beyond the Standard Model.

## PROFESSIONAL COMPETENCE AND ACTIVITY

### Professional Activities

#### *Honors and Awards*

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|------|--|
| 2018 | Simons GGI Visiting Scientist Fellowship, The Galileo Galilei Institute for Theoretical Physics, Arcetri, Florence, Italy                      |
| 2017 | Co-recipient of the American Physical Society J.J. Sakurai Prize for Theoretical Particle Physics (\$10,000, shared among the four recipients) |

2015	Received the honorary designation of Distinguished Professor of Physics
2013	Selected (with Abraham Seiden) to deliver the UCSC Faculty Research Lecture in February, 2014
2013	Finalist for an Excellence in Teaching Award, chosen by the Committee on Teaching of the UCSC Faculty Senate
2009	Alexander von Humboldt Research Award, €60,000
2008–2011	Visiting Professor, Institute for Particle Physics Phenomenology, University of Durham, England
1998	Frontier Fellow, Fermilab
1995	Scientific Associate, CERN
1993	elected Fellow of the American Physical Society
1985–1988	Department of Energy Outstanding Junior Investigator

*Grants and Contracts*

2019–2020	Department of Energy Research Grant (with Michael Dine and Stefano Profumo), \$317,000
2018–2019	Department of Energy Research Grant (with Michael Dine and Stefano Profumo), \$308,000
2017–2018	Department of Energy Research Grant (with Michael Dine and Stefano Profumo), \$299,000
2016–2017	Department of Energy Research Grant (with Thomas Banks, Michael Dine and Stefano Profumo), \$403,000
2015–2016	Department of Energy Research Grant (with Thomas Banks, Michael Dine and Stefano Profumo), \$411,000
2014–2015	Department of Energy Research Grant (with Thomas Banks, Michael Dine and Stefano Profumo), \$420,000
2013–2014	Department of Energy Research Grant (with Thomas Banks, Michael Dine and Stefano Profumo), \$411,000 (eleven months)
2012–2013	Department of Energy Research Grant (with Thomas Banks, Michael Dine and Stefano Profumo), \$123,000 (six months)
2011–2012	Department of Energy Research Grant (with Thomas Banks, Michael Dine and Stefano Profumo), \$474,000
2010–2011	Department of Energy Research Grant (with Thomas Banks and Michael Dine), \$410,000
2009–2010	Department of Energy Research Grant (with Thomas Banks and Michael Dine), \$403,000
2008–2009	Department of Energy Research Grant (with Thomas Banks and Michael Dine), \$412,000
2007–2008	Department of Energy Research Grant (with Thomas Banks and Michael Dine), \$391,000
2006–2007	Department of Energy Research Grant (with Thomas Banks and Michael Dine), \$380,000

2005–2006 Department of Energy Research Grant (with Thomas Banks and Michael Dine), \$370,000

2004–2005 Department of Energy Research Grant (with Thomas Banks and Michael Dine), \$375,000

2003–2004 Department of Energy Research Grant (with Thomas Banks and Michael Dine), \$395,000

2002–2003 Department of Energy Research Grant (with Thomas Banks and Michael Dine), \$360,000

2001–2002 Department of Energy Research Grant (with Thomas Banks and Michael Dine), \$330,000

2000–2001 Department of Energy Research Grant (with Thomas Banks and Michael Dine), \$300,000

2000 NSF grant in support of the RADCOR-2000 conference, \$5,000

1999–2000 Department of Energy Research Grant (with Michael Dine), \$170,000

1998–1999 Department of Energy Research Grant (with Michael Dine), \$160,000

1997–1998 Department of Energy Research Grant (with Michael Dine), \$146,000

1997–2000 US–Israel Bi-national Science Foundation grant (with Yosef Nir and Michael Dine)

1996–1998 Maria Sklodowska-Curie Joint Fund, Poland–USA (with Stefan Pokorski and Michael Dine)

1996–1997 Department of Energy Research Grant (with Michael Dine), \$141,000

1995–1996 Department of Energy Research Grant (with Michael Dine), \$144,000

1994–1995 Department of Energy Research Grant (with Michael Dine), \$152,000

1993–1996 US–Israel Bi-national Science Foundation grant (with Yosef Nir and Michael Dine)

1993–1994 Department of Energy Research Grant (with Michael Dine), \$160,000

1993–1994 Texas National Laboratory Research Commission Grant (with John Gu-  
nion), \$120,000

1992–1993 Department of Energy Research Grant (with Michael Dine), \$160,000

1991–1992 Department of Energy Research Grant (with Michael Dine), \$160,000

1990–1991 Department of Energy Research Grant (with Michael Dine), \$135,000

1989–1990 Department of Energy Research Grant, \$90,000

1988–1989 Department of Energy Research Grant (with Thomas Banks), \$178,386

1987–1988 Department of Energy Outstanding Junior Investigator, and Research  
Grant (with Thomas Banks), \$160,000

1986–1987 Department of Energy Outstanding Junior Investigator Research Grant,  
\$60,000

1986 grants for the 1986 Theoretical Advanced Study Institute (with Joel Pri-  
mack) Department of Energy: \$30,000 and National Science Founda-  
tion: \$30,000

1985–1986 Department of Energy Outstanding Junior Investigator Research Grant,  
\$57,000

1985 Department of Energy Outstanding Junior Investigator Research Grant,  
\$30,000

*Partner to International research efforts*

2017–2020 Member of the Harmonia project, under contract UMO-2015/18/M/ST2/0051,  
supported by the Polish National Science Center for Scientific Re-  
search

2015–2019 *Non Minimal Higgs*, MSCA-RISE grant of the European Commission  
(Marie Skłodowska-Curie Actions), €301,500

*Professional Organizations*

American Physical Society

American Association of Physics Teachers

Sigma Xi, University of California, Santa Cruz Chapter

Mathematical Association of America

## WRITINGS AND CREATIVE ACTIVITIES IN PROGRESS

### Articles submitted to Professional Journals

1. Supersymmetry, Part I (Theory), B.A. Allanach and H.E. Haber, in *Review of Particle Physics*, M. Tanabashi *et al.* [Particle Data Group], *Phys. Rev.* **D98**, 030001 (2018), 2019 update, available at <http://pdg.lbl.gov/2019/reviews/rpp2019-rev-susy-1-theory.pdf>

### Books to be published

1. *From Spinors to Supersymmetry*, H.K. Dreiner, H.E. Haber, and S.P. Martin, to be published by Cambridge University Press (expected delivery of the manuscript: 2020).

## PUBLISHED WRITINGS AND CREATIVE ACTIVITIES

### Books

1. *The Higgs Hunter's Guide*, J.F. Gunion, H.E. Haber, G.L. Kane, and S. Dawson, Frontiers in Physics Lecture Note Series #80, (Addison-Wesley Publishing Company, Redwood City, CA, 1990); paperback edition: (Westview Press, Boulder, CO, 2000).

### Edited Books

1. *CPNSH: Workshop on CP Studies and Non-Standard Higgs Physics, May 2004—December 2005*, edited by S. Kraml *et al.*, CERN Yellow Book, CERN-2006-009 (2006).

2. *Particle Physics and Cosmology: The Quest for Physics Beyond the Standard Model(s)*, *Proceedings of the 2002 Theoretical Advanced Study Institute in Elementary Particle Physics*, H.E. Haber and A.E. Nelson, editors (World Scientific, Singapore, 2004).
3. *Proceedings of the 5th International Symposium on Radiative Corrections (RADCOR 2000)*, H.E. Haber, editor (SLAC-R-579; eConf C000911).
4. *Electroweak Symmetry Breaking and New Physics at the TeV Scale*, T.L. Barklow, S. Dawson, H.E. Haber, and J. Siegrist, editors (World Scientific, Singapore, 1996).
5. *From the Planck Scale to the Weak Scale: Toward a Theory of the Universe*, *Proceedings of the 1986 Theoretical Advanced Study Institute in Elementary Particle Physics*, vols. I and II, H.E. Haber, editor, (World Scientific, Singapore, 1987).
6. *Proceedings of the Theoretical Symposium on Intense Medium Energy Sources of Strangeness*, T. Goldman, H.E. Haber, and H.F.-W. Sadrozinski, editors, (American Institute of Physics, New York, 1983).

## Chapters in Books

1. Supersymmetry, Part I (Theory), H.E. Haber, in *Review of Particle Physics*, M. Tanabashi *et al.* [Particle Data Group], *Physical Review* **D98**, 030001 (2018).
2. Supersymmetric Theory and Models, H.E. Haber and L. Stephenson Haskins, in *Anticipating The Next Discoveries In Particle Physics*, *Proceedings of the 2016 Theoretical Advanced Study Institute in Elementary Particle Physics*, edited by Rouven Essig and Ian Low (World Scientific, Singapore, 2018) pp. 355–499.
3. Supersymmetry, Part I (Theory), H.E. Haber, in *Review of Particle Physics*, C. Patrignani *et al.* [Particle Data Group], *Chinese Physics* **C40**, 100001 (2016).
4. Supersymmetry, Part I (Theory), H.E. Haber, in *Review of Particle Physics*, K.A. Olive *et al.* [Particle Data Group], *Chinese Physics* **C38**, 090001 (2014).
5. Supersymmetry, Part I (Theory), H.E. Haber, in *Review of Particle Physics*, J. Beringer *et al.* [Particle Data Group], *Phys. Rev.* **D86**, 010001 (2012).
6. Low-Energy Supersymmetry at Future Colliders, J.F. Gunion and H.E. Haber, updated chapter in *Perspectives on Supersymmetry II*, edited by G.L. Kane (World Scientific, Singapore, 2010) pp. 420–445.
7. Supersymmetry, Part I (Theory), H.E. Haber, in *Review of Particle Physics*, K. Nakamura *et al.* [Particle Data Group], *Journal of Physics* **G37**, 075021 (2010).
8. Supersymmetry, Part I (Theory), H.E. Haber, in *Review of Particle Physics*, C. Amsler *et al.* [Particle Data Group], *Phys. Lett.* **B667**, 1–1340 (2008).
9. Supersymmetry, Part I (Theory), H.E. Haber, in *Review of Particle Physics*, W.-M. Yao *et al.* [Particle Data Group], *Journal of Physics* **G33**, 1–1232 (2006).

10. Higgs Physics at the Linear Collider, J.F. Gunion, H.E. Haber and R. Van Kooten, in *Linear Collider Physics in the New Millennium*, edited by K. Fujii, D. Miller and A. Soni, (World Scientific, Singapore, 2005) pp. 41–133.
11. Supersymmetry, Part I (Theory), H.E. Haber, in *Review of Particle Physics*, S. Eidelman *et al.* [Particle Data Group], *Phys Lett.* **B592**, 1–1109 (2004).
12. Supersymmetry, Part I (Theory), H.E. Haber, in *Review of Particle Physics*, K. Hagiwara *et al.* [Particle Data Group], *Phys Rev.* **D66**, 010001 (2002).
13. Supersymmetry, Part I (Theory), H.E. Haber, in *Review of Particle Physics*, D.E. Groom *et al.* [Particle Data Group], *Eur. Phys. J.* **C15**, 1–878 (2000).
14. Low-Energy Supersymmetry at Future Colliders, J.F. Gunion and H.E. Haber, in *Perspectives on Supersymmetry*, edited by G.L. Kane (World Scientific, Singapore, 1998) pp. 235–255.
15. Supersymmetry, Part I (Theory), H.E. Haber, in *Review of Particle Physics*, C. Caso *et al.* [Particle Data Group], *Eur. Phys. J.* **C3**, 1–794 (1998).
16. Higgs Boson Masses and Couplings in the Minimal Supersymmetric Model, H.E. Haber, in *Perspectives on Higgs Physics II*, edited by G.L. Kane (World Scientific, Singapore, 1997) pp. 23–67.
17. Electroweak Symmetry Breaking and Beyond the Standard Model, S. Dawson and H.E. Haber, in *Electroweak Symmetry Breaking and New Physics at the TeV Scale*, edited by T. Barklow, S. Dawson, H.E. Haber and J. Siegrist (World Scientific, Singapore, 1996) pp. 1–22.
18. Supersymmetry, H.E. Haber, in *Review of Particle Physics*, R.M. Barnett *et al.* [Particle Data Group], *Phys. Rev.* **D54**, 1–720 (1996).
19. Note on Supersymmetry, H.E. Haber, in *Review of Particle Properties*, L. Montanet *et al.* [Particle Data Group], *Phys. Rev.* **D45**, 1173–1823 (1994).
20. Introductory Low-Energy Supersymmetry, H.E. Haber, in *Recent Directions in Particle Theory*, Proceedings of the 1992 Theoretical Advanced Study Institute in Elementary Particle Physics, Boulder, CO, June 1–26, 1992, edited by J. Harvey and J. Polchinski (World Scientific, Singapore, 1993) pp. 589–686.
21. Higgs bosons in the Minimal Supersymmetric Model: The Influence of Radiative Corrections, H.E. Haber, in *Perspectives on Higgs Physics*, edited by G.L. Kane (World Scientific, Singapore, 1993) pp. 79–129.
22. Note on Supersymmetry, H.E. Haber, in *Review of Particle Properties*, K. Hikasa *et al.* [Particle Data Group], *Phys. Rev.* **D45**, S1 (1992) [Erratum: *Phys. Rev.* **D46**, 5210 (1992)].
23. Higgs Physics: Theory and Phenomenology, H.E. Haber, in *The Standard Model and Beyond*, Proceedings of the 1990 Mt. Sorak Symposium on Theoretical Physics, edited by J.E. Kim, (World Scientific, Singapore, 1991) pp. 28–104.

24. Lectures on Electroweak Symmetry Breaking, H.E. Haber, in *Testing the Standard Model*, Proceedings of the 1990 Theoretical Advanced Study Institute in Elementary Particle Physics, edited by M. Cvetič and Paul Langacker (World Scientific, Singapore, 1991) pp. 340–475.

### Articles submitted to the arXiv

1. Useful relations among the generators in the defining and adjoint representations of  $SU(N)$ , H.E. Haber, arXiv:1912.13302 [math-ph].

### Peer-reviewed Articles in Professional Journals

1. Basis-independent treatment of the complex 2HDM, R. Boto, T.V. Fernandes, H.E. Haber, J.C. Romão and J.P. Silva, *Phys. Rev.* **D101**, 055023 (2020).
2. Symmetries and Mass Degeneracies in the Scalar Sector, H.E. Haber, O.M. Ogreid, P. Osland and M.N. Rebelo, *JHEP* **1901**, 042 (2019).
3. Heavy Higgs boson decays in the alignment limit of the 2HDM, B. Grzadkowski, H.E. Haber, O.M. Ogreid and P. Osland, *JHEP* **1812**, 056 (2018).
4. Multi-Higgs doublet models: the Higgs-fermion couplings and their sum rules, M.P. Bento, H.E. Haber, J.C. Romão and J.P. Silva, *JHEP* **1810**, 143 (2018).
5. Multi-Higgs doublet models: physical parametrization, sum rules and unitarity bounds, M.P. Bento, H.E. Haber, J.C. Romão and J.P. Silva, *JHEP* **1711**, 095 (2017).
6. The Impact of Two-Loop Effects on the Scenario of MSSM Higgs Alignment without Decoupling, H.E. Haber, S. Heinemeyer and T. Stefaniak, *Eur. Phys. J.* **C77**, 742 (2017).
7. High scale flavor alignment in two-Higgs doublet models and its phenomenology, S. Gori, H.E. Haber and E. Santos, *JHEP* **1706**, 110 (2017).
8. The Light and Heavy Higgs Interpretation of the MSSM, P. Bechtle, H.E. Haber, S. Heinemeyer, O. Stål, T. Stefaniak, G. Weiglein and L. Zeune, *Eur. Phys. J.* **C77**, 67 (2017).
9. Perturbation Theory in Supersymmetric QED: Infrared Divergences and Gauge Invariance, M. Dine, P. Draper, H.E. Haber and L.S. Haskins, *Phys. Rev.* **D94**, 095003 (2016).
10. Partially Natural Two Higgs Doublet Models, P. Draper, H.E. Haber and J.T. Ruderman, *JHEP* **1606**, 124 (2016).
11. Scrutinizing the alignment limit in two-Higgs-doublet models. II.  $m_H = 125$  GeV, J. Bernon, J.F. Gunion, H.E. Haber, Y. Jiang and S. Kraml, *Phys. Rev.* **D93**, 035027 (2016).
12. Alignment limit of the NMSSM Higgs sector, M. Carena, H.E. Haber, I. Low, N.R. Shah and C.E.M. Wagner, *Phys. Rev.* **D93**, 035013 (2016).
13. New LHC Benchmarks for the CP-conserving Two-Higgs-Doublet Model, H. E. Haber and O. Stål, *Eur. Phys. J.* **C75**, 491 (2015).



14. Scrutinizing the alignment limit in two-Higgs-doublet models:  $m_h = 125$  GeV, J. Bernon, J. F. Gunion, H. E. Haber, Y. Jiang and S. Kraml, *Phys. Rev.* **D92**, 075004 (2015).
15. Preserving the validity of the Two-Higgs Doublet Model up to the Planck scale, P. Ferreira, H. E. Haber and E. Santos, *Phys. Rev.* **D92**, 033003 (2015).
16. Complementarity between nonstandard Higgs boson searches and precision Higgs boson measurements in the MSSM, M. Carena, H.E. Haber, I. Low, N.R. Shah and C.E.M. Wagner, *Phys. Rev.* **D91**, 035003 (2015).
17. Probing wrong-sign Yukawa couplings at the LHC and a future linear collider, P.M. Ferreira, J.F. Gunion, H.E. Haber and R. Santos, *Phys. Rev.* **D89**, 115003 (2014).
18. Decoupling of the Right-handed Neutrino Contribution to the Higgs Mass in Supersymmetric Models, P. Draper and H.E. Haber, *Eur. Phys. J.* **C73**, 2522 (2013).
19. Mass-degenerate Higgs bosons at 125 GeV in the two-Higgs-doublet model, P.M. Ferreira, R. Santos, H.E. Haber and J.P. Silva, *Phys. Rev.* **D87**, 055009 (2013).
20. A Group-theoretic Condition for Spontaneous CP Violation, H.E. Haber and Z. Surujon, *Phys. Rev.* **D86**, 075007 (2012).
21. Basis-independent methods for the two-Higgs-doublet model III: The CP-conserving limit, custodial symmetry, and the oblique parameters  $S$ ,  $T$ ,  $U$ , H.E. Haber and D. O’Neil, *Phys. Rev.* **D83**, 055017 (2011).
22. Geometric picture of generalized-CP and Higgs-family transformations in the two-Higgs-doublet model, P. M. Ferreira, H.E. Haber, M. Maniatis, O. Nachtmann and J.P. Silva, *Int. J. Mod. Phys.* **A26**, 769 (2011).
23. Supersymmetric Monojets at the Large Hadron Collider, B.C. Allanach, S. Grab and H.E. Haber, *JHEP* **1101**, 138 (2011) [Erratum: **1107**, 087 (2011); **1109**, 027 (2011)].
24. Two-component spinor techniques and Feynman rules for quantum field theory and supersymmetry, H.K. Dreiner, H.E. Haber and S.P. Martin, *Physics Reports* **494**, 1 (2010).
25. Basis invariant conditions for supersymmetry in the two-Higgs-doublet model, P.M. Ferreira, H.E. Haber and J.P. Silva, *Phys. Rev.* **D82**, 016001 (2010).
26. Note on the pseudo-Nambu-Goldstone Boson of Meta-stable SUSY Violation, T. Banks and H.E. Haber, *JHEP* **0911**, 097 (2009).
27. Generalized CP symmetries and special regions of parameter space in the two-Higgs-doublet model, P.M. Ferreira, H.E. Haber and J.P. Silva, *Phys. Rev.* **D79**, 116004 (2009).
28. Hard supersymmetry-breaking “wrong-Higgs” couplings of the MSSM, H.E. Haber and J.D. Mason, *Phys. Rev.* **D77**, 115011 (2008).
29. Seesaw mechanism in the sneutrino sector and its consequences, A. Dedes, H.E. Haber and J. Rosiek, *JHEP* **0711**, 059 (2007).

30. The neutralino sector in the U(1)-extended supersymmetric standard model, S.Y. Choi, H.E. Haber, J. Kalinowski and P.M. Zerwas, *Nucl. Phys.* **B778**, 85 (2007).
31. Basis-independent methods for the two-Higgs-doublet model. II. The Significance of  $\tan\beta$ , H.E. Haber and D. O'Neil, *Phys. Rev.* **D74**, 015018 (2006) [Erratum: *Phys. Rev.* **D74**, 059905 (2006)].
32. Supersymmetry parameter analysis: SPA convention and project, J.A. Aguilar-Saavedra *et al.*, *Eur. Phys. J.* **C46**, 43 (2006).
33. Physics Interplay of the LHC and the International Linear Collider, G. Weiglein *et al.* [The LHC/ILC Study Group], *Physics Reports* **426**, 47 (2006).
34. Conditions for explicit CP-Violation in the two-Higgs-doublet model, J.F. Gunion and H.E. Haber, *Phys. Rev.* **D72**, 095002 (2005).
35. Basis-independent methods for the two-Higgs-doublet model, S. Davidson and H.E. Haber, *Phys. Rev.* **D72**, 035004 (2005) [Erratum: *Phys. Rev.* **D72**, 099902 (2005)].
36. The CP-conserving two-Higgs-doublet model: The approach to the decoupling limit, J.F. Gunion and H.E. Haber, *Phys. Rev.* **D67**, 075019 (2003).
37. The would-be majoron in R-parity violating supersymmetry, Y. Grossman and H.E. Haber, *Phys. Rev.* **D67**, 036002 (2003).
38. Higgs boson theory and phenomenology, M. Carena and H.E. Haber, *Prog. Part. Nucl. Phys.* **50**, 63 (2003).
39. The Snowmass points and slopes: Benchmarks for SUSY searches, B.C. Allanach *et al.*, *Eur. Phys. J.* **C25**, 113 (2002).
40. Distinguishing a Minimal Supersymmetric Standard Model Higgs Boson from the SM Higgs Boson at a Linear Collider, M. Carena, H.E. Haber, H.E. Logan and S. Mrenna, *Phys. Rev.* **D65**, 055005 (2002) [E: **D65**, 099902 (2002)].
41. Can the Higgs sector contribute significantly to the muon anomalous magnetic moment?, A. Dedes and H.E. Haber, *JHEP* **0105**, 006 (2001).
42. Basis Independent Analysis of the Sneutrino Sector in R-Parity Violating Supersymmetry, Y. Grossman and H.E. Haber, *Phys. Rev.* **D63**, 075011 (2001).
43. Supersymmetric QCD Corrections to the MSSM  $h^0 b\bar{b}$  Vertex in the Decoupling Limit, H.E. Haber, M.J. Herrero, H.E. Logan, S. Peñaranda, S. Rigolin and D. Temes, *Phys. Rev.* **D63**, 055004 (2001).
44. Reconciling the Two-Loop Diagrammatic and Effective Field Theory Computations of the Mass of the Lightest CP-even Higgs Boson in the MSSM, M. Carena, H.E. Haber, S. Heinemeyer, W. Hollik, C.E.M. Wagner and G. Weiglein, *Nucl. Phys.* **B580**, 29 (2000).
45. Radiative Corrections to the  $Zb\bar{b}$  Vertex and Constraints on Extended Higgs Sectors, H.E. Haber and H.E. Logan, *Phys. Rev.* **D62**, 015011 (2000).

46. (S)neutrino properties in  $R$  Parity Violating Supersymmetry, Y. Grossman and H.E. Haber, *Phys. Rev.* **D59**, 093008 (1999).
47. The Higgs Mass in the MSSM Infrared Fixed Point Scenario, J.A. Casas, J.R. Espinosa and H.E. Haber, *Nucl. Phys.* **B526**, 3 (1998).
48. Limits from LEP Data on CP-Violating Non-Minimal Higgs Sectors, J.F. Gunion, B. Grzadkowski, H.E. Haber, and J. Kalinowski, *Phys. Rev. Lett.* **79**, 982 (1997).
49. Sneutrino Mixing Phenomena, Y. Grossman and H.E. Haber, *Phys. Rev. Lett.* **78**, 3438 (1997).
50. Approximating the Radiatively Corrected Higgs Mass in the Minimal Supersymmetric Model, H.E. Haber, R. Hempfling, and A.H. Hoang, *Z. Phys.* **C75**, 539 (1997).
51. Multiple Production of Neutral Supersymmetric Higgs Bosons at High Energy  $e^+e^-$  Colliders, A. Djouadi, H.E. Haber and P.M. Zerwas, *Phys. Lett.* **B375**, 203 (1996).
52. Four-Generation Low-Energy Supersymmetry with a Light Top Quark Mass, M. Carena, H.E. Haber and C.E.M. Wagner, *Nucl. Phys.* **B472**, 55 (1996).
53. QCD Corrections to Charged Higgs-Mediated  $b \rightarrow c\tau\nu$  Decay, Y. Grossman, H.E. Haber, and Y. Nir, *Phys. Lett.* **B357**, 630 (1995).
54. Discovering Supersymmetry with Like-Sign Dileptons, R.M. Barnett, J.F. Gunion and H.E. Haber, *Phys. Lett.* **B315**, 349 (1993).
55.  $Z^0 \rightarrow A^0 A^0 \nu \bar{\nu}$  and  $e^+e^- \rightarrow A^0 A^0 Z$  in Two Higgs Doublet Models, H.E. Haber and Y. Nir, *Phys. Lett.* **B306**, 327 (1993).
56. Higgs Boson Production in the Photon-Photon Collider Mode of a High Energy  $e^+e^-$  Linear Collider, J.F. Gunion and H.E. Haber, *Phys. Rev.* **D48**, 5109 (1993).
57. The Renormalization-Group Improved Higgs Sector of the Minimal Supersymmetric Model, H.E. Haber and R. Hempfling, *Phys. Rev.* **D48**, 4280 (1993).
58. Constraints from Global Symmetries on Radiative Corrections to the Higgs Sector, H.E. Haber and A. Pomarol, *Phys. Lett.* **B302**, 435 (1993).
59. Can the Higgs Mass be Entirely due to Radiative Corrections?, M.A. Díaz and H.E. Haber, *Phys. Rev.* **D46**, 3086 (1992).
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48. When are Radiative Corrections Important in the Minimal Supersymmetric Model, H.E. Haber, in *Properties of SUSY Particles*, Proceedings of the 23rd Workshop of the INFN Eloisatron Project, Erice, Italy, September 28–October 4, 1992, edited by L. Cifarelli and V.A. Khoze (World Scientific, Singapore, 1993) pp. 321–372.

49. The Higgs Sector in the Minimal Supersymmetric Model: Radiative Corrections and Their Implications, H.E. Haber, in *Proceedings of the International Workshop on Electroweak Symmetry Breaking*, Hiroshima, Japan, November 12–15, 1991, edited by W.A. Bardeen, J. Kodaira and T. Muta (World Scientific, Singapore, 1992) pp. 225–248.
50. Higgs Theory and Phenomenology at Future  $e^+e^-$  Linear Colliders, by H.E. Haber, in *Physics and Experiments with Linear Colliders*, Proceedings of the Linear Collider Workshop, Saariselkä, Finland, 9–14 September, 1991, edited by R. Orava, P. Eerola and M. Nordberg (World Scientific, Singapore, 1992) pp. 235–275.
51. Higgs Boson Production in Photon-Photon Collisions at a High Energy  $e^+e^-$  Linear Collider, J.F. Gunion and H.E. Haber, in *Research Directions for the Decade*, Proceedings of the 1990 Summer Study on High Energy Physics, Snowmass, CO, June 25–July 13, 1990, edited by E.L. Berger (World Scientific, Singapore, 1992), pp. 469–472.
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53. Expected Limits on Supersymmetric Parameters at LEP-200, J.F. Gunion and H.E. Haber, in *ibid.*, pp. 206–207.
54. Determining the Mass of the Gluino at the SSC, R.M. Barnett, J.F. Gunion and H.E. Haber, in *ibid.*, pp. 201–202.
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57. Disposing of the Light Higgs Boson: Theoretical Issues in  $K \rightarrow \pi H$ , H.E. Haber, in *Higgs Particle(s): Physics Issues and Experimental Searches in High-Energy Collisions*, Proceedings of the 8th INFN Eloisatron Project Workshop, July 15–26, 1989, Erice, Italy, edited by A. Ali (Plenum Press, New York, 1990) p. 209.
58. Non-Minimal Higgs Bosons: Theory and Phenomenology, H.E. Haber, in *Higgs Particle(s): Physics Issues and Experimental Searches in High-Energy Collisions*, Proceedings of the 8th INFN Eloisatron Project Workshop, July 15–26, 1989, Erice, Italy, edited by A. Ali (Plenum Press, New York, 1990) p. 111.
59. Can the Higgs Sector Be Probed in Tau Lepton Decay?, H.E. Haber, in *Proceedings of the Tau-Charm Factory Workshop*, May 23–27, 1989, Stanford, CA, edited by L.V. Beers (SLAC-Report-343, June 1989), p. 538.
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61. A Primer on Higgs Boson Low-Energy Theorems, S. Dawson and H.E. Haber, in *ibid.*, p. 324.

62. Minimal and Nonminimal Higgs Bosons: Two Introductory Lectures, H.E. Haber, in *ibid.*, p. 197.
63. Supersymmetry Signals at Present and Future Colliders, H.E. Haber, SCIPP-88/39 (1988), in *Superstrings, Unified Theories and Cosmology 1988*, The ICTP Series in Theoretical Physics—Volume 5, edited by G. Ellis *et al.* (World Scientific, Singapore, 1989) p. 582.
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65. Testing the Viability of the  $E_T^{miss}$  Signature in Gluino Production at the SSC, R.M. Barnett *et al.*, in *Proceedings of the Summer Study on High energy Physics in the 1990s* June 27–July 15, 1988, Snowmass, CO, edited by S. Jensen (World Scientific, Singapore, 1989), p. 226.
66. New Particle Signals at the SSC and at an Upgraded Tevatron Collider, R.M. Barnett *et al.*, in *Proceedings of the Summer Study on High energy Physics in the 1990s* June 27–July 15, 1988, Snowmass, CO, edited by S. Jensen (World Scientific, Singapore, 1989), p. 159.
67. Higgs Bosons Beyond the Standard Model, J.F. Gunion and H.E. Haber, in *XXIV International Conference on High Energy Physics*, Munich, August, 1988, edited by R. Kotthaus and J.H. Kühn (Springer-Verlag, Berlin, 1989) p. 1475.
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69. Techniques for Finding Supersymmetry at the SSC, R.M. Barnett *et al.*, in *Proceedings of the Workshop on Experiments, Detectors, and Experimental Areas for the Supercollider*, Berkeley, CA 1987, edited by R. Donaldson and M.G.D. Gilchriese (World Scientific, Singapore, 1988) p. 178.
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73. Gluino Decays to  $W$  and  $Z$  Bosons at the SSC, H. Baer *et al.*, *Int. J. Mod. Phys.* **A2**, 1131 (1987); and in *ibid.*, p. 241.

74. Superstrings: Group Report, R. Arnowitt *et al.*, *Int. J. Mod. Phys.* **A2**, 1097 (1987); and in *ibid.*, p. 223.
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76. Probing the Higgs Sector at the SSC: The Standard Model and Beyond, J.F. Gunion and H.E. Haber, *Int. J. Mod. Phys.* **A2**, 957 (1987); and in *ibid.*, p. 67.
77. Distribution of Heavy Particles in the Proton, H.E. Haber, D.E. Soper, and R.M. Barnett, in *Physics Simulations at High Energies*, Madison, Wisconsin (May, 1986), edited by V. Barger, T. Gottschalk, and F. Halzen (World Scientific, Singapore, 1987) p. 425.
78. The Search for Supersymmetry at the Tevatron and SSC, R.M. Barnett and H.E. Haber, in *Physics Simulations at High Energies*, Madison, Wisconsin (May, 1986), edited by V. Barger, T. Gottschalk, and F. Halzen (World Scientific, Singapore, 1987) p. 442.
79. Beyond the Standard Model at the SSC, H.E. Haber, in *Supercollider Physics*, Proceedings of the Oregon Workshop on Super High Energy Physics, edited by D.E. Soper (World Scientific, Singapore, 1986) p. 194.
80. What if the Higgsino is the Lightest Supersymmetric Particle?, H.E. Haber, in the *Proceedings of the 13th SLAC Summer Institute on Particle Physics*, Stanford, CA, July 29–August 9, 1985, edited by Eileen C. Brennan (SLAC Report No. 296) p. 143.
81. Signatures of Supersymmetry at the CERN Collider, H.E. Haber, in *New Particles 1985*, Madison, Wisconsin (May, 1985), edited by V. Barger, D. Cline, and F. Halzen (World Scientific, Singapore, 1986) p. 128; also in *Tests of Electroweak Theories: Polarized Processes and Other Phenomena*, Trieste, Italy (June, 1985), edited by B.W. Lynn and C. Verzegnassi (World Scientific, Singapore, 1986) p. 185.
82. Implications for Supersymmetry of the CERN Monojets, H.E. Haber, in *The Santa Fe Meeting*, First Annual Meeting (New Series) of the Division of Particles and Fields of the American Physical Society, Oct. 31–Nov. 3, 1984, edited by T. Goldman and M.M. Nieto (World Scientific, Singapore, 1985) p. 390.
83. Searching for Supersymmetry at the SSC, S. Dawson *et al.*, in *Proceedings of the 1984 Summer Study on the Design and Utilization of the Superconducting Super Collider*, Snowmass, Colorado, June 23–July 13, 1984, p. 263.
84. Simulating Supersymmetry at the SSC, R.M. Barnett and H.E. Haber, *ibid.*, p. 296.
85. Signals of new W's and Z's, H.E. Haber, *ibid.*, p. 125.
86. Search for Horizontal Gauge Bosons at the SSC, C.H. Albright, N.G. Deshpande, J.F. Gunion, and H.E. Haber, *ibid.*, p. 144.
87. Reconstructing Couplings from Asymmetries in Heavy Z-Boson Decays, N.G. Deshpande, J.F. Gunion, and H.E. Haber, *ibid.*, p. 119.

88.  $\tau$ -Decay Spectra at the SSC, J.F. Gunion and H.E. Haber, *ibid.*, p. 150.
89. Taus—A Probe of New W and Z Couplings, H.E. Haber, in *ibid.*, p. 157.
90. Non-Standard Higgs Bosons, P. Langacker *et al.*, *ibid.*, p. 13.
91. Low Energy Signals of Composite Models, R. Barbieri *et al.*, published in the *Proceedings of the Workshop on Electroweak Symmetry Breaking*, p. 37 (1984).
92. Heavy Particle Production at the SSC, S.J. Brodsky, H.E. Haber, and J.F. Gunion, in the *Proceedings of the 1984 DPF Workshop on  $p\bar{p}$  Options for the Supercollider*, H.E. Haber, edited by J.E. Pilcher and A.R. White, American Physical Society (1984), p. 100.
93. Production of Gluino-Gluino Bound States at Hadron Colliders, in *ibid.*, p. 287.
94. Are Supersymmetry and Grand Unification Compatible? H.E. Haber, in *Quarks, Leptons and Supersymmetry*, edited by J. Tran Thanh Van (Editions Frontieres, France, 1982).

## UNPUBLISHED NOTES AND OTHER WRITINGS

Note: The unpublished notes and other writings listed below were prepared either as supplements to my teaching or as a set of notes used in research projects. Links to these notes can be found on my UCSC Academic webpage, <http://scipp.ucsc.edu/~haber/#sec6>.

1. *Evaluating the one-loop function arising in  $h \rightarrow \gamma\gamma$* , by H.E. Haber
2. *A Tale of Three Diagonalizations*, by H.E. Haber
3. *Notes on the Matrix Exponential and Logarithm*, by H.E. Haber
4. *What is the group of conjugate symplectic matrices?*, by H.E. Haber
5. *Parameterization of real orthogonal antisymmetric matrices*, by H.E. Haber
6. *Toward a set of 2HDM benchmarks*, by H.E. Haber
7. *The eigenvalues of the quadratic Casimir operator and second-order indices of a simple Lie algebra*, by H.E. Haber
8. *Notes on basis changes and matrix diagonalization*, by H.E. Haber
9. *Notes on the complex inverse trigonometric and hyperbolic functions and their principal values*, by H.E. Haber
10. *Proof of a trace inequality in matrix algebra*, by H.E. Haber
11. *Notes on the spontaneous breaking of  $SU(N)$  and  $SO(N)$  via a second-rank tensor multiplet*, by H.E. Haber
12. *Notes on antisymmetric matrices and the pfaffian*, by H.E. Haber



13. *Complex representation of scalar fields and the embedding of  $U(n)$  in  $SO(2n)$* , by H.E. Haber
14. *The probability that a product of random numbers is less than a fixed constant*, by H.E. Haber
15. *Massless Majorana and Weyl fermions cannot be distinguished*, by H.E. Haber

## MISCELLANEOUS

1. A Q&A panel with SCIPP physicists, Howard Haber, Jason Nielsen, Stefano Profumo, Alexander Grillo, Ryan Reece and Sheena Schier following a screening of the documentary film *Particle Fever* at the Nickelodeon on March 14, 2014.  
See <http://news.ucsc.edu/2014/02/particle-fever.html>
2. Aspen Center for Physics presents: the Heinz R. Pagels Public Lecture Series—*What's Coming at the Large Hadron Collider? Dark Matter? Black Holes? New Dimensions in Space* with Michael Turner, Marcela Carena, Patrick Fox, Howard Haber, Elizabeth Simmons on August 14, 2008. This event was televised.
3. The EPP Questions: Response from the LHC/ILC Study Group, J. Conway, J.F. Gunion, H.E. Haber, S. Heinemeyer, G. Moortgat-Pick and G. Weiglein, submitted to the Elementary Particle Physics in the 21st Century (EPP 2010) Panel of the National Research Council of the National Academy of Sciences (May, 2005).

## UNIVERSITY SERVICE

### Administrative Appointments and Service

*Department:*

2019–2020	Member, Undergraduate Curriculum Committee
Spring 2019	Member, Graduate Committee
2018–2019	Member, Community Prize & Development Committee
Spring 2018	Co-Chairman, Physics Colloquium Committee
2017-2018	Chairman, Graduate Recruitment Committee
2016-2018	Member, Faculty Recruitment Committee
2016-2017	Member, Graduate Recruitment Committee
2015-2016	Chairman, Graduate Recruitment Committee
2015	Member, Physics Department Colloquium Committee
2015	Member, Graduate Recruitment Committee
2012–2013	Chairman, Graduate Recruitment Committee
2012–2013	Chairman, Physics Graduate Committee
2009–2011	Member, Graduate Recruitment Committee

2005–2008	Chairman, Graduate Recruitment Committee
2003–2004	Co-chairman, Physics Colloquium Committee
2003–2004	Member, Physics Undergraduate Committee
1997–2003	Chairman, Physics Undergraduate Committee
1995–1996	Chairman, Physics Colloquium Committee
1994–1997	Member, Physics Undergraduate Committee
1994	Member, Physics Colloquium Committee
1990–1994	Chairman, Physics Graduate Committee
1990–1991	Member, Search Committee, Target of Opportunity Position
1989–1990	Member, Graduate Committee
1989–1990	Member, Search Committee, Chairman, HEP Theory Position
1988–1989	Chairman, Computer Committee

*Division of Biological and Physical Sciences:*

2004–2006	Chair, Divisional Committee on Academic Personnel
1999–2004	Member, Divisional Committee on Academic Personnel
1999–2000	Member, Divisional Curriculum Committee

*Academic Senate:*

2014–2016	Member, Senate Committee on Library and Scholarly Communication (COLASC)
December, 2007	Chair, University Ad-Hoc Committee (for faculty promotion)
June, 2007	Chair, University Ad-Hoc Committee (for faculty promotion)
2001–2004	Member, University Ad-Hoc Committee (for faculty promotion)
2000	Chair, University Ad-Hoc Committee (for faculty promotion)
1999–2000	Member, Committee on Rules, Jurisdiction and Elections
1999	Chair, University Ad-Hoc Committee (for faculty promotion)
1998	Chair, University Ad-Hoc Committee (for faculty promotion)
1998	Co-authored (with Professor David M. Harrington): <i>Faculty Perceptions of a UCSC Research Environment in Need of Restoration and Improvement</i> , sponsored by the UCSC Committee on Research and contributed to the Advisory Report of the Millennium Committee [see: <a href="http://scipp.ucsc.edu/~haber/cor/ucscresearch.html">http://scipp.ucsc.edu/~haber/cor/ucscresearch.html</a> ].
1997	Member, University Ad-Hoc Committee (for faculty promotion)
1996	Chair, UCSC Campus forum to address the question: Should UC renew its contract with the Department of Energy (DOE) to manage the Lawrence Livermore National Laboratory and Los Alamos National Laboratory? [For the announcement of the forum, see <a href="http://scipp.ucsc.edu/~haber/UC_CORP/santacruz.html">http://scipp.ucsc.edu/~haber/UC_CORP/santacruz.html</a> ].

- 1995-1998            Chairman, Committee on Research (UCSC Academic Senate)
- 1992                 Member, University Ad-Hoc Committee (for faculty promotion)

*UC Office of the President:*

- 1995-1998            Member, University of California Committee on Research Policy (UCORP)
- 1995-1996            Webmaster for UCORP. Created two web pages: a public page reporting UCORP activities [[http://scipp.ucsc.edu/~haber/UC\\_CORP/](http://scipp.ucsc.edu/~haber/UC_CORP/)] and a private page [<http://scipp.ucsc.edu/~haber/ucorp/>] which documented ongoing UCORP activities. A special web page was created to document the ongoing campus debate on the question of whether UC should renew its contract with the Department of Energy (DOE) to manage the Lawrence Livermore National Laboratory and Los Alamos National Laboratory [see [http://scipp.ucsc.edu/~haber/UC\\_CORP/doelabs.html](http://scipp.ucsc.edu/~haber/UC_CORP/doelabs.html)].

*Miscellaneous UC Service:*

- 2002-2005            Member, Dean's Committee on Opportunity for Particle Theory at UC Davis.

**OUTSIDE PROFESSIONAL ACTIVITIES**

**Invited Talks at Conferences and Workshops**

- September, 2019      Higgs Days 2019, "Future Perspectives (Part 2)"
- September, 2019      Scalars 2019, "The Future of Particle Physics—A Theorist's Perspective"
- September, 2019      Scalars 2019, "Approximate alignment without decoupling in the 2HDM naturally"
- August, 2019          Sorak Symposium reminiscence on Particle Physics, "Quo Vadis Higgs (or what the current Higgs data is trying to tell us)"
- August, 2019          Sorak Symposium reminiscence on Particle Physics, "The incomplete and biased history of the Higgs boson"
- May, 2019             7th RISE Collaboration Workshop: NonMinimalHiggs, in Helsinki Finland, "Approximate alignment without decoupling in the 2HDM naturally"
- February, 2019        The 4th Toyama International Workshop on "Higgs as a Probe of New Physics 2019" (HPNP2019), in Osaka, Japan, "Symmetries and Mass Degeneracies in the Scalar Sector"
- December, 2018        The 5th HARMONIA Warsaw-Lisbon-Catania-Dresden meeting, at the OCHOTA campus of the University of Warsaw, in Warsaw, Poland, "Symmetries and Mass Degeneracies in the Scalar Sector"

September, 2018 Workshop on Multi-Higgs Models, at the Instituto Superior Técnico in Lisbon, Portugal, “Symmetries and Mass Degeneracies in the Scalar Sector”

August, 2018 The 46th SLAC Summer Institute–Standard Model at 50: Successes and Challenges, at SLAC in Stanford, CA USA, “The woefully incomplete, unabashedly biased history of the Higgs Boson”

June, 2018 MASS2018: Origin of Mass at the High Energy and Intensity Frontier, at CP3 Origins in Odense, Denmark, “Beyond the Standard Model Higgs Boson”

May, 2018 PLANCK 2018: 21th International Conference from the Planck Scale to the Electroweak Scale, in Bonn, Germany, “Mass Degeneracies in Extended Higgs Sectors”

March, 2018 Rencontres de Moriond: QCD and High Energy Interactions, in La Thuile, Aosta Valley, Italy, “Approximate Higgs alignment without decoupling”

February, 2018 TRIUMF Theory Workshop on New Physics and the Higgs, at TRIUMF in Vancouver, BC, Canada, “Mass Degeneracies in Extended Higgs Sectors”

November, 2017 Scalars 2017, at the University of Warsaw, in Warsaw, Poland, “Replicating the Higgs Doublet”

September, 2017 Energy Frontier in Particle Physics: LHC and Future Colliders, at National Taiwan University in Taipei, Taiwan, “Alignment in Models of Extended Higgs Sectors”

September, 2017 GGI Workshop: "Collider Physics and the Cosmos", at the Galileo Galilei Institute for Theoretical Physics in Arcetri, Florence, Italy, “Non-minimal Higgs sectors”

May, 2017 2nd HARMONIA Meeting, in Warsaw, Poland, “In search of natural Higgs alignment without decoupling in the 2HDM”

May, 2017 PLANCK 2017: 20th International Conference from the Planck Scale to the Electroweak Scale, in Warsaw, Poland, “Alignment in extended Higgs models”

March, 2017 3rd RISE Collaboration Meeting: NonMinimalHiggs, in Toyama, Japan, “High scale flavor-aligned 2HDM”

March, 2017 The 3rd Toyama International Workshop on ‘Higgs as a Probe of New Physics 2017’ (HPNP2017), in Toyama, Japan, “A Theorist’s Outlook for Higgs physics beyond the Standard Model”

January, 2017 The 2017 April American Physical Society Meeting in January, in Washington, DC, “ Beyond the Standard Model Higgs Boson”

December, 2016 Helsinki Higgs Forum, at the Helsinki Institute of Physics in Helsinki, Finland, “High scale flavor alignment in the 2HDM and its phenomenology”

November, 2016 Higgs Couplings 2016, at SLAC, Stanford, CA, “SUSY and the alignment limit”

October, 2016 Sixth International Workshop on the Prospects for Charged Higgs Discovery at Colliders (CHARGED 2016), in Uppsala, Sweden, “ Future Higgs Studies: A Theorist’s Outlook”

September, 2016	Higgs Days at Santander 2016, in Santander, Spain, “ Alignment without decoupling in the MSSM”
September, 2016	Workshop on Multi-Higgs Models, in Lisbon, Portugal, “ Flavor violation via Planck scale alignment in the 2HDM”
September, 2016	Higgs Hunting 2016, in Paris, France, “ Higgs Hunting 2016 Theory Summary Talk”
July, 2016	The 24rd International Conference on Supersymmetry and Unification of Fundamental Interactions (SUSY 2016), in Melbourne, Australia, “Extended Higgs sectors an the alignment limit”
June–July, 2016	Pre-SUSY 2016, preceding the 24th International Conference on Supersymmetry and Unification of Fundamental Interactions, University of Melbourne, Melbourne, Australia, “SM and SUSY Higgs” (three lectures)
June, 2016	2016 Theoretical Advanced Study Institute (TASI 2016), University of Colorado, Bolder, CO, “Supersymmetric Theories and Models” (four lectures)
August, 2015	The 23rd International Conference on Supersymmetry and Unification of Fundamental Interactions (SUSY 2015), at Granlibakken Conference Center, Tahoe City, CA, “Partially Natural Two Higgs Doublet Models”
May, 2015	Third KUTS Workshop, LPTHE, Paris, France, “The Alignment Limit of the MSSM Higgs sector—the Impact of Radiative Corrections”
April, 2015	The 4th MCTP Spring Symposium on Higgs Boson Physics in the Standard Model and Beyond, Ann Arbor, MI, “Partially Natural Two Higgs Doublet Models”
February, 2015	The 2nd Toyama International Workshop on Higgs as a Probe of New Physics 2015 (HPNP2015), Toyama, Japan, “Constraints on the alignment limit of the MSSM Higgs sector”
January, 2015	SID Workshop, SLAC, Stanford, CA, “Higgs Physics and the ILC”
September, 2014	IFT Program on Physics Challenges in the face of LHC-14, Madrid, Spain, “Constraints on the alignment limit of the MSSM Higgs sector”
September, 2014	IFT Program on Physics Challenges in the face of LHC-14, Madrid, Spain, “Motivations for a stable scalar in an extended Higgs sector”
September, 2014	Higgs Days at Santander 2014, Santander, Spain, “2HDM Benchmarks—Theoretical Framework”
September, 2014	3rd Workshop on Multi-Higgs Models, Lisbon, Portugal, “Constraints on the alignment limit of the MSSM Higgs sector”
July, 2014	22nd International Conference on Supersymmetry and Unification of Fundamental Interactions (SUSY 2014), Manchester, UK, “Can the $Hb\bar{b}$ coupling be equal in magnitude to its SM value but opposite in sign?”
June, 2014	Workshop of the LHC Higgs Cross Section Working Group, CERN “2HDM—Report on recent activities”
May, 2014	Americas Workshop on Linear Colliders (AWLC14), Fermilab, “Probing wrong-sign Yukawa couplings”
May, 2014	Americas Workshop on Linear Colliders (AWLC14), Fermilab, “Higgs Physics”

April, 2014	Precision SUSY Higgs Mass Calculation Initiative, KUTS Workshop I, MPI, Munich, Germany, “Some Issues for Precision Higgs Mass Computations”
March, 2014	Gunion Fest, Davis, CA, “Precision Higgs and Future Colliders”
March, 2014	Bay Area Particle Physics Seminar, San Francisco, CA, “Decoupling and Alignment in Light of the Higgs Data”
November, 2013	2013 International Workshop on Future Linear Colliders (LCWS 2013), Tokyo, Japan, “Higgs/EWSB Working Group Summary”
November, 2013	2013 Inter-Academy Seoul Science Forum, Seoul, South Korea, “The Higgs Boson: Past, Present and Future”
September, 2013	Higgs Days at Santander 2013, Santander, Spain, “2HDM Theory and a strategy for benchmarks”
September, 2013	Scalars 2013, Warsaw, Poland, “Higgs Physics at the ILC”
July, 2013	Higgs Hunting 2013, Orsay, France, “Higgs physics—approaching the decoupling limit”
July, 2013	LHC—The First Part of the Journey, Kavli Institute for Theoretical Physics, University of California, Santa Barbara, “Decoupling and the MSSM Higgs Mass”
July, 2013	Snowmass Energy Frontier Workshop, University of Washington, Seattle, WA, “BSM Higgs Physics at the ILC”
June, 2013	PDG Workshop on Searches, Lawrence Berkeley National Laboratory, Berkeley, CA, “Supersymmetry Theory Review”
May, 2013	Planck 2013: <i>From the Planck scale to the electroweak scale</i> , Bonn, Germany, “The MSSM Higgs Mass Revisited”
April, 2013	The LHC Higgs Signal: Characterization, Interpretation and BSM Model Implications, Davis, CA, “2HDM Benchmarks for LHC Higgs Studies”
March, 2013	Aspen 2013 Winter Conference— <i>Higgs Quo Vadis</i> , Aspen Center for Physics, Aspen, CO, “A Higgs Hunter’s Perspective”
February, 2013	Higgs as a Probe of New Physics 2013 (HPNP2013), University of Toyama, Japan, “Alternative futures for the Higgs data: are we approaching or receding from the decoupling limit?”
January, 2013	The Higgs Symposium, The Higgs Centre for Theoretical Physics, University of Edinburgh, “A Higgs Hunter’s Perspective”
December, 2012	KITP Miniprogram: Higgs Identification, Kavli Institute for Theoretical Physics, University of California, Santa Barbara, “Workshop Summary: Revisiting the Higgs Wishlist”
December, 2012	West Coast LHC Theory Meeting: Higgs and More at the LHC, University of California, Riverside, “Mass-Degenerate-Higgs Hunters Explore the Two-Higgs-Doublet Model”
October, 2012	ATLAS Analysis Jamboree on Higgs Searches, Berkeley, CA, “The Two-Higgs Doublet Model in Theory and Practice”
September, 2012	Higgs Days at Santander 2012, IFCA (Instituto de Fisica de Cantabria), Santander, Cantabria, Spain, “Degenerate Higgs hunters and the $\gamma\gamma$ excess”

- September, 2012 Higgs Days at Santander 2012, IFCA (Instituto de Fisica de Cantabria), Santander, Cantabria, Spain, “Higgs boson couplings near the decoupling limit”
- August, 2012 Workshop on Multi-Higgs Models, Complexo Interdisciplinar da UL, Lisbon, Portugal, “Necessary Conditions for Spontaneous CP Violation”
- July, 2012 40th SLAC Summer Institute, *The Electroweak Scale: Unraveling the Mysteries at the LHC*, “EWSB Basics”
- July, 2012 LHC Theory Workshop, University of Melbourne, “What can the LHC Higgs data teach us about the Two-Higgs-Doublet Model?”
- May, 2012 The Next Stretch of the Higgs Magnificent Mile Workshop, Northwestern University, Chicago campus, “Theoretical motivations for a Higgs factory”
- December, 2011 Annual United Kingdom Theory Meeting, IPPP, University of Durham, “Higgs and SUSY”
- October, 2011 Berkeley workshop on searches for supersymmetry at the LHC, “Theoretical Aspects of Higgs Physics”
- September, 2011 International Workshop on Future Linear Colliders (LCWS11), “A Framework for Precision 2HDM studies at the ILC/CLIC”
- September, 2011 IDPASC Higgs School, Foz do Arelho, Portugal, “Extending the Standard Model Higgs Sector: Two Higgs doublets and the MSSM” (2 lectures)
- September, 2011 19th International Conference on Supersymmetry and Unification of Fundamental Interactions (SUSY-11), Fermilab, “Higgs: where are we now?”
- August, 2011 Scalars 2011 Conference, Warsaw, Poland, “Basis independent methods for the Two-Higgs Doublet Model”
- August, 2011 CERN TH-LPCC Summer Institute on LHC Physics, “SUSY Monojets and Precision Coupling Determinations”
- May, 2011 Implications of EWSB Workshop, University of Wisconsin at Madison, “What’s so special about the MSSM Higgs sector?”
- December, 2010 4th Annual Workshop of the Helmholtz Alliance “Physics at the Terascale,” Dresden, Germany, “Status and prospects for a Higgs boson discovery”
- October, 2010 Higgs Days at Santander 2010, Santander, Spain, “An Introduction to Higgs Boson Theory”
- October, 2010 2nd Bethe Center Workshop: Cosmology meets Particle Physics Bad Honnef, Germany, “Prospects for Higgs Physics at the LHC”
- August, 2010 The Pre-18th International Conference on Supersymmetry and Unification of Fundamental Interactions, Bonn, Germany, “Two-component Spinor Formalism: practical methods for treating Majorana fermions”
- July, 2010 PASCOS-2010, Valencia, Spain, “Higgs Phenomenology at the LHC”
- May, 2010 MCTP Symposium on Higgs Boson Physics, “Custodial Symmetry Breaking in the two Higgs doublet model”
- January, 2010 Zurich conference in celebration of Daniel Wyler’s 60th birthday: The New, the Rare and the Beautiful, “Radiative Neutralino Decay—21 Years Later”

January, 2010 Nordic Conference in Particle Physics, Spaaatind, Norway, “Two-component Spinor Formalism: practical methods for treating Majorana fermions”

January, 2010 Nordic Conference in Particle Physics, Spaaatind, Norway, “Introduction to Electroweak Symmetry Breaking” (2 lectures)

September, 2009 DESY Theory Workshop, “Electroweak Symmetry Breaking”

September, 2009 Workshop on Multi-Higgs Models, Lisbon, Portugal, “Custodial Symmetry Breaking in the Two-Higgs-Doublet Model”

August, 2009 CERN Theory Institute, “The Pseudo-Nambu Goldstone Boson of Metastable SUSY-Violation”

June, 2009 The 17th International Conference on Supersymmetry and the Unification of Fundamental Interactions (SUSY-09), “The Pseudo-Nambu Goldstone Boson of Metastable SUSY-Violation”

April, 2009 International Workshop on Supersymmetry and Supersymmetry Breaking, IPPP, Durham, England, “The Pseudo-Nambu Goldstone Boson of Metastable SUSY-Violation”

October, 2008 Augusto Barroso Fest, Lisbon, Portugal, “The Two-Higgs-Doublet Model: Past, Present and Future”

May, 2008 PLANCK-08 meeting: from the Planck scale to the electroweak scale, “The Wrong-Higgs Couplings of the MSSM”

October, 2007 American Linear Collider Physics Group (ALCPG) Workshop 2007, “The ILC Physics Menu—500 GeV and 1 TeV”

August, 2007 CERN Theory BSM Institute, New Physics and the LHC, “Sneutrino mixing phenomena in the seesaw-extended MSSM”

April, 2007 Workshop on the LHC Early Phase for the ILC, Fermilab, “Report of the Higgs Working Group”

January, 2007 Kane Symposium (in honor of Gordon Kane’s 70th Birthday), “The Two Higgs Doublet Model: Past, Present and Future”

August, 2006 Particle Theory in Anticipation of the LHC—a workshop at the Aspen Center for Physics, Aspen, CO, “Two-Higgs Physics at Future Colliders”

July, 2006 Vancouver Linear Collider Workshop (VLCW-06), University of British Columbia, Vancouver, BC Canada, “A Model Independent Approach to Two-Higgs Doublet Model Physics”

July, 2005 The Pre-13th International Conference on Supersymmetry and Unification of Fundamental Interactions, IPPP, Durham, England, “Practical methods for treating Majorana fermions”

May, 2005 Frontiers in Contemporary Physics III, Vanderbilt University, Nashville, TN, “Linear Collider Physics: Theory and Phenomenology” (2 lectures)

March, 2005 3rd Workshop on CP Studies and Non-Standard Higgs Physics (CP-NSH), SLAC, Stanford, CA, “Basis-Independent Description of CP-Violation in the Two-Higgs-Doublet Model”

February, 2005 Aspen Winter Conference: The Highest Energy Physics, Aspen, CO, “Opportunities for Discovery at the International Linear Collider (ILC)”

August, 2004 Paul Scherrer Institute Zuoz Summer School on Particle Physics, Zuoz, Switzerland, “Introduction to Supersymmetry” (5 lectures)



June, 2004	Theoretical Advanced Study Institute, Boulder, CO, “Practical Supersymmetry: Four Introductory Lectures” (4 lectures)
May, 2004	PLANCK-04, The 7th European Meeting on Physics From the Planck Scale to the Electroweak Scale, “A New Look at the Two-Higgs-Doublet Model”
April, 2004	International Conference on Linear Colliders LCWS-04, Paris, France, “Higgs Theory—A Brief Overview”
January, 2004	ALCPG 2004 Winter Workshop, SLAC, “Higgs Working Group Summary”
October, 2003	Second Workshop on the Discovery Potential of an Asymmetric $B$ Factory at $10^{36}$ Luminosity, SLAC, “Exploring Supersymmetry with Precision $B$ Physics”
May, 2003	2003 PHENO Symposium, Madison, WI, “PHENO-2003 Conference Summary”
February, 2003	LHC/LC Study Group Meeting, CERN, “The approach to the decoupling limit in Two-Higgs-Doublet Models”
September, 2002	6th International Symposium on Radiative Corrections: Application of Quantum Field Theory to Phenomenology (RADCOR-2002) and 6th Zeuthen Workshop on Elementary Particle Theory: Loops and Legs 2002, Kloster Banz, Germany, “Decoupling and the radiatively-corrected MSSM Higgs sector”
September, 2002	Summer School for High Energy Physics, Maria Laach, Eifel, Germany, “Higgs Physics” (four lectures)
June, 2002	10th International Conference on Supersymmetries in Physics (SUSY-02), “Higgs theory and phenomenology in the Standard Model and MSSM”
January, 2002	The 18th International Workshop on Weak Interactions and Neutrinos (WIN-02), “MSSM Higgs Phenomenology in the Decoupling Limit”
July, 2001	Workshop on the Future of High Energy Physics (Snowmass 2001) “Introduction to Electroweak Symmetry Breaking”
June, 2001	ICTP Summer School in High Energy Physics and Cosmology, Trieste, Italy, “Introduction to Supersymmetry” (four lectures)
May, 2001	IPPP Conference on Phenomenology of Beyond the Standard Model, Durham, England, “Precision Higgs Physics”
October, 2000	International Symposium Celebrating 30 Years of Supersymmetry, Minneapolis, Minnesota, “Low-energy supersymmetry and its phenomenology”
June, 2000	8th International Conference on Supersymmetries in Physics (SUSY-2K), CERN, “Neutrino and Sneutrino Masses and Mixing in R-Parity-Violating Supersymmetry”
March, 2000	LBL Linear Collider Workshop, Berkeley, “Higgs Physics at Future Colliders: Summary and Issues for the Future”
June, 1999	7th International Conference on Supersymmetries in Physics (SUSY 99), Fermilab, “Theory and phenomenology of the MSSM Higgs sector at the upgraded Tevatron”
April, 1999	Phenomenology for the Third Millennium (Pheno '99 Symposium), University of Wisconsin, “Recent Developments in Higgs Physics”

- November, 1998 Physics at Run II: Workshop on Supersymmetry/Higgs Summary Meeting, Fermilab, “Higgs Working Group Report I”
- September, 1998 4th International Symposium on Radiative Corrections (RADCOR 98), Universitat Autònoma de Barcelona, “How well can we predict the mass of the Higgs Boson of the Minimal Supersymmetric Model?”
- July, 1998 6th International Conference on Supersymmetries in Physics (SUSY 98), Oxford University, “(S)neutrino Masses and Mixing in Low-Energy Supersymmetry”
- May, 1998 First European Meeting *From the Planck Scale to the Electroweak Scale*, Kazimierz, Poland, “Higgs Physics at the Tevatron”
- May, 1998 General Meeting of the Supersymmetry/Higgs Physics at the Tevatron Run-II Workshop, “Report of the Higgs Group”
- November, 1997 Workshop on Physics at the First Muon Collider, Fermilab, “The Higgs Sector of Low-Energy Supersymmetry”
- September, 1997 2nd International Workshop on Electron-Electron Interactions at TeV Energies ( $e^-e^-$  97), “Higgs Physics at  $e^-e^-$  Colliders”
- June, 1997 ICTP Summer School in High Energy Physics and Cosmology, Trieste, Italy, “The Standard Model—Four Introductory Lectures” (four lectures)
- May, 1997 5th International Conference on Supersymmetries in Physics (SUSY 97), “The Status of the Minimal Supersymmetric Standard Model and Beyond”
- April, 1997 3rd Warsaw Workshop on Physics from the Planck Scale to the Electroweak Scale, Warsaw, Poland, “Sneutrino Mixing Phenomena”
- December, 1996 Rutherford Laboratory Christmas Meeting, “Review of Higgs Physics and Phenomenology”
- December, 1996 Ringberg Workshop on the Higgs Puzzle—What can We Learn from LEP2, LHC, NLC, and FMC?, “Future Directions in Higgs Phenomenology”
- July, 1996 Snowmass Workshop on New Directions for High Energy Physics, “Light Higgs Working Group Summary”
- December, 1995 Workshop on Supersymmetric Phenomena and Supersymmetric Grand Unified Theories, Institute for Theoretical Physics, Santa Barbara, “Low-Energy Supersymmetry, Precision Electroweak Data, and the Top Quark Mass”
- September, 1995 Workshop on Unification, Gran Sasso Laboratory, Italy, “A Four-Generation Low-Energy Supersymmetric Model with a Light Top Quark Mass”
- July, 1995 European Physical Society Meeting, Brussels, Belgium, “Supersymmetric Hints from Precision Electroweak Data?”
- July, 1995 European Physical Society Meeting, Brussels, Belgium, “Recent Refinements in Higgs Physics”
- June, 1995 Workshop on Particle Physics, Valencia, Spain, “Challenges for Low-Energy Supersymmetry”
- June, 1995 Workshop on Physics at Future  $e^+e^-$  Linear Colliders, Gran Sasso Laboratory, Italy, “Physics Beyond the Standard Model at Future Colliders”
- March, 1995 German Physical Society Meeting, Karlsruhe, Germany, “Physics Beyond the Standard Model”

March, 1995	XXXth Rencontres de Moriond: Electroweak Interactions and Unified Theories, “Is $m_t \approx m_W$ Ruled Out?”
February, 1995	Workshop on Electroweak Physics, Ringberg Castle, Germany, “The Challenge of the Non-Minimal Higgs Sector for Future $e^+e^-$ Colliders”
December, 1994	Beyond the Standard Model IV Workshop, Granlibakken, Lake Tahoe, CA, “Quest for the Non-Minimal Higgs Sector”
September, 1994	Supersymmetry Workshop, DESY, Hamburg, Germany, “The MSSM Higgs Sector—Can We Distinguish it from the Standard Model”
September, 1994	Workshop on Supersymmetry, Institute for Theoretical Physics, University of Warsaw, Poland, “If the Higgs Sector is Non-Minimal, How Will We Know?”
August, 1994	Report on the DPF Long Range Planning Study, DPF Meeting, Albuquerque, NM, “Electroweak Symmetry Breaking and Beyond the Standard Model”
July, 1994	Workshop on Electroweak Physics, Eötvös University, Budapest, Hungary, “Decoupling of the Non-Minimal Higgs Sector and Implications for Future Searches”
July, 1994	Eötvös Summer School Graduate Courses, Eötvös University, Budapest, Hungary, “The Physics of Electroweak Symmetry Breaking” (three lectures)
August, 1993	XXI SLAC Summer Institute on Particle Physics, Stanford, CA, “Spin Structure at Future High-Energy Colliders” (three lectures)
April, 1993	Workshop on Recent Advances in the Superworld, Houston, TX, “Low-Energy Supersymmetric Basics” (or “The Supersymmetric Top-Ten Lists”)
March, 1993	SUSY-93 Workshop, Boston, MA, “Phenomenology of Gluino Searches at the Tevatron”
October, 1992	23rd Workshop of the INFN Eloisatron Project—The Decay Properties of Supersymmetric Particles, Erice (Trapani), Italy, “The Higgs Sector in the Minimal Supersymmetric Model”
June, 1992	Theoretical Advanced Study Institute, Boulder, CO, “Three Lectures on Low-Energy Supersymmetry”
April, 1992	The SSC Physics Symposium, Madison, WI, “Radiatively-Corrected Higgs Sector of the Minimal Supersymmetric Model”
January, 1992	Aspen Winter Conference in Elementary Particle Physics, “Effects of Radiative Corrections to the Higgs Sector of the Minimal Supersymmetric Model”
November, 1991	International Workshop on Electroweak Symmetry Breaking, Hiroshima, Japan, “The Higgs Sector in the Minimal Supersymmetric Model: Radiative Corrections and Their Implications”
September, 1991	Workshop of Physics and Experiments with Linear Colliders, Saariselkä, Finland, “Higgs Theory and Phenomenology at Future $e^+e^-$ Linear Colliders”
February, 1991	Workshop on Precision Electroweak Measurements, Institute for Theoretical Physics, Santa Barbara, CA, “Supersymmetry Effects on Electroweak Predictions”
August, 1990	Mt. Sorak Symposium on Theoretical Physics, South Korea, “Two Lectures on Higgs Physics”

June, 1990	Theoretical Advanced Study Institute, Boulder, CO, “Six Lectures on Electroweak Symmetry Breaking”
March, 1990	Workshop on Thinking About the Top Quark, Institute for Theoretical Physics, Santa Barbara, CA, “Implications of a Large Top Quark Mass for Higgs Boson Phenomenology”
July, 1989	8th INFN Eloisatron Project Workshop—Higgs Particles: Physics Issues and Experimental Searches in High Energy Collisions, Erice, Italy, “Nonminimal Higgs Bosons: Theory and Phenomenology”
May, 1989	Workshop on the Tau-Charm Factory, SLAC, “Can the Higgs Sector be Probed in Tau-Decay?”
January, 1989	Workshop on High Energy Physics Phenomenology, Bombay, India, “Minimal and Nonminimal Higgs Bosons: Two Introductory Lectures”, and “Higgs Boson Hunting: Report of the Higgs Boson Working Group”
July, 1988	Conference on Phenomenology in High Energy Physics, Trieste, Italy, “Supersymmetry Signals at Present and Future Colliders”
June, 1987	European Physical Society Meeting, Uppsala, Sweden, “Search for Supersymmetry at Future Colliders”
May, 1986	Madison Workshop on Physics Simulations at High Energy, “Distribution of Heavy Particles in the Proton”
August, 1985	Oregon Workshop on Super High Energy Physics, “Beyond the Standard Model at the SSC”
June, 1985	Workshop on Tests of Electroweak Theories, Trieste, Italy, “Signatures of Supersymmetry at the CERN Collider”
May, 1985	Madison Workshop on New Particles, “Signatures of Supersymmetry at the CERN Collider”
November, 1984	Annual Meeting of the Division of Particles and Fields of the American Physical Society, Santa Fe, NM, “Implications for Supersymmetry of the CERN Monojets”
June-July, 1984	Snowmass Workshop on the Superconducting Supercollider, “Report of the New $W$ ’s and $Z$ ’s Working Group”
August, 1983	Gordon Conference, “New Trends in Electroweak Physics”
March, 1982	Rencontres de Moriond, “Are Supersymmetry and Grand Unification Compatible?”

### **Outside Committees and Consulting**

2015–present	Member of the International Advisory Committee of the Higgs Hunting Conference, Orsay/Paris, France
2013–present	Member of the International Advisory Committee of the International Workshop on Higgs as a Probe of New Physics (HPNP)
2013–present	Honorary Member, Aspen Center for Physics
2009–present	Member, International Advisory Committee, Workshop on Multi-Higgs Models, Lisbon, Portugal
1997–present	Member of the Board of Editors, <i>European Physical Journal C</i>
2007–2020	Member of the Particle Data Group

2001–2019 Member of the International Advisory Board of the International Symposium on Radiative Corrections (RADCOR)

2019 Member, National Science Foundation High Energy Physics Theory and Cosmology Panel

2018 Mail-in reviewer for theoretical HEP proposals to the FY2018 DOE Office of Science Early Career Research Program

2018 Member of the Aspen Center for Physics Presidential Search Committee

2017 Member of the American Physical Society J.J. Sakurai Prize Selection Committee

2016–2017 Member of the Division of Particles and Fields Mentoring Award Selection Committee

2016 Chair of the Aspen Center for Physics Presidential Search Committee

2015–2018 Member of the Advisory Committee to the Fermilab Distinguished Scholars Program (FDSP)

2015 Member of the Advisory Committee to HEPAP to formulate a charge to the Subcommittee on Respective Roles and Responsibilities (RR&R)

2015 Member, Department of Energy FY16 University Theory Program Comparative Review Panel

2015 Member, National Science Foundation High Energy Physics Theory and Cosmology Panel

2014 Member, Department of Energy FY15 University Theory Program Comparative Review Panel

2014 Member of the P5 Rollout Campaign Committee

2013–2018 Member of the Dean’s Advisory Committee to evaluate the Laboratory for Nuclear Science at MIT

2013–2015 Elected Secretary/Treasurer of the Division of Particles and Fields of the American Physical Society

2013 Member, Colloquium Committee, Aspen Center for Physics

2011–2012 Member, Admissions Committee, Aspen Center for Physics

2011 Member, Program Committee for the International Workshop on Future Linear Colliders (LCWS11)

2011 Member, International Advisory Committee for the SUSY 2011 Conference

2010–2011 Member, Executive Committee of the Trustees, Aspen Center for Physics

2010 Member, Local Organizing Committee for the SUSY-10 Conference

2010 Member, National Science Foundation High Energy Physics Theory and Cosmology Panel

2009–2010 Member, Program Committee, Aspen Center for Physics

2008–2009 Member, Nominations Committee, Aspen Center for Physics

2007–2008 Member, Program Committee, Aspen Center for Physics

2007 Member, Program Committee, American Linear Collider Physics Group Workshop 2007 (ALCPG07)

2007 Candidate for Vice-Chair of the Division of Particles and Fields

2006–2008 Member, Admissions Committee, Aspen Center for Physics

2006–2008 Member, Nominations Committee, Aspen Center for Physics

2006–2007 Member, Admissions Committee, Aspen Center for Physics  
 2005–2011 Trustee, Aspen Center for Physics  
 2006 Member, Department of Energy Panel to Review Outstanding Junior Investigator (OJI) grants in particle physics  
 2006 Chair of the American Physical Society J.J. Sakurai Prize Selection Committee  
 2005–2010 Member, Finance Committee, Aspen Center for Physics  
 2005–2006 Member, Program Committee, Aspen Center for Physics  
 2005 Vice-chair of the American Physical Society J.J. Sakurai Prize Selection Committee  
 2004–2005 Member, Nominations Committee, Aspen Center for Physics  
 2002–2004 Member, Editorial Board of Physical Review D  
 2002–2004 elected Member, Executive Committee of the Division of Particles and Fields of the American Physical Society  
 2004 Chair, Program Committee, Aspen Center for Physics  
 2004 Member, Admissions Committee, Aspen Center for Physics  
 2003 Chair, Public Lecture Series Committee, Aspen Center for Physics  
 2003 Member, Program Committee, Aspen Center for Physics  
 2001–2002 Member, International Scientific Advisory Committee for the SUSY-07 Conference  
 2001–2002 Member, Tenure Review Committee, Stanford Linear Accelerator Center  
 2001 Member, NSF Panel to Review Theoretical Physics Grants  
 2000–2001 Member, Computer Committee, Aspen Center for Physics  
 2000–2001 Member, Faculty Search Committee, Stanford Linear Accelerator Center  
 1999 Chair, Nominations Committee, Aspen Center for Physics  
 1998–2001 Member, Finance Committee, Aspen Center for Physics  
 1998–2001 Corporate Secretary, Aspen Center for Physics  
 1997–1998 Aspen Winter Conference Committee, Aspen Center for Physics  
 1996–2000 Member, SLAC Experimental Program Advisory Committee  
 1996–1997 Scientific Secretary, Aspen Center for Physics  
 1995–1996 Assistant Scientific Secretary, Aspen Center for Physics  
 1994–1997 Member, Board of Editors, *Zeitschrift für Physik C*  
 1994–1995 Aspen Winter Conference Committee, Aspen Center for Physics  
 1993–1995 Computing Committee, Aspen Center for Physics  
 1993–2013 General Member, Aspen Center for Physics  
 1992–2006 Outside consultant to the Particle Data Group  
 1989–1992 Divisional Associate Editor of *Physical Review Letters*  
 December, 1989 Member of a National Science Foundation Panel to select recipients of the Presidential Young Investigator Awards in Physics

## Visiting Appointments

March, 2020	Center for Cosmology and Particle Physics, New York University
Feb.–March, 2020	Bethe Center for Theoretical Physics, Bonn
August–Sept., 2019	Aspen Center for Physics
July–August, 2019	Department of Applied Mathematics and Theoretical Physics, University of Cambridge
June, 2019	Instituto Superior Técnico in Lisbon, Portugal
June, 2019	Munich Institute for Astro- and Particle Physics (MIAPP)
Nov.–Dec., 2018	Bethe Center for Theoretical Physics, Bonn
August–Oct., 2018	Galileo Galilei Institute for Theoretical Physics, Florence
July–August, 2018	Aspen Center for Physics
July, 2018	CERN Theory Group
May, 2018	Bethe Center for Theoretical Physics, Bonn
September, 2017	Galileo Galilei Institute for Theoretical Physics, Florence
August–Sept., 2017	Bethe Center for Theoretical Physics, Bonn
July–August, 2017	Aspen Center for Physics
December, 2016	Helsinki Institute of Physics
August, 2016	Aspen Center for Physics
July–August, 2016	CERN Theory Group
July, 2016	Bethe Center for Theoretical Physics, Bonn
March–June, 2016	Kavli Institute for Theoretical Physics, Santa Barbara
September, 2015	Galileo Galilei Institute for Theoretical Physics, Florence
July–August, 2015	Aspen Center for Physics
July, 2015	CERN Theory Group
June, 2015	Bethe Center for Theoretical Physics, Bonn
September, 2014	Bethe Center for Theoretical Physics, Bonn
August, 2014	Aspen Center for Physics
July, 2014	Mainz Institute for Theoretical Physics (MITP), Mainz
June, 2014	Bethe Center for Theoretical Physics, Bonn
Jan.–June, 2014	Lawrence Berkeley National Laboratory, Theoretical Physics Group and Particle Data Group
Sept.–Dec., 2013	Lawrence Berkeley National Laboratory, Particle Data Group
September, 2013	Bethe Center for Theoretical Physics, Bonn
August, 2013	Aspen Center for Physics
December, 2012	Kavli Institute for Theoretical Physics, Santa Barbara
September, 2012	Bethe Center for Theoretical Physics, Bonn
August, 2012	Aspen Center for Physics
September, 2011	Bethe Center for Theoretical Physics, Bonn

August, 2011	CERN Theory Group
June–July, 2011	Aspen Center for Physics
Aug.–Dec., 2010	Bethe Center for Theoretical Physics, Bonn
June–July, 2010	Aspen Center for Physics
September, 2009	Bethe Center for Theoretical Physics, Bonn
August, 2009	CERN Theory Group
July, 2009	Aspen Center for Physics
November, 2008	Bethe Center for Theoretical Physics, Bonn
July–August, 2008	Aspen Center for Physics
June–July, 2008	Rheinische Friedrich-Wilhelms-Universität Bonn
March–April, 2008	Kavli Institute for Theoretical Physics, Santa Barbara
August, 2007	CERN Theory Group
July, 2007	Aspen Center for Physics
Sept.–Nov., 2006	Rheinische Friedrich-Wilhelms-Universität Bonn
August, 2006	Aspen Center for Physics
March, 2006	Rheinische Friedrich-Wilhelms-Universität Bonn
August, 2005	Aspen Center for Physics
July, 2005	IPPP, Durham, England
June, 2005	Rheinische Friedrich-Wilhelms-Universität Bonn
August, 2004	CERN Theory Group
June–July, 2004	Aspen Center for Physics
June–July, 2003	Aspen Center for Physics
Jan.–March, 2003	Institute for Particle Physics Phenomenology (IPPP), Durham, England
September, 2002	Rheinische Friedrich-Wilhelms-Universität Bonn
July–August, 2002	Aspen Center for Physics
June–July, 2002	CERN Theory Group
July, 2001	Aspen Center for Physics
June, 2001	Universidad Autónoma de Madrid
Feb.–Apr., 2001	Oxford University
Jan.–Feb., 2001	Rheinische Friedrich-Wilhelms-Universität Bonn
August, 2000	Aspen Center for Physics
July, 2000	CERN Theory Group
September, 1999	Rutherford Laboratory Theory Group
Aug.–Sept., 1999	CERN Theory Group
July, 1999	Aspen Center for Physics
Sept.–Dec., 1998	Fermilab Theory Group
August, 1998	CERN Theory Group
July, 1998	Rutherford Laboratory Theory Group



August, 1997	Aspen Center for Physics
June–July, 1997	CERN Theory Group
March, 1997	Consejo Superior de Investigaciones Científicas, Madrid
September, 1996	Max-Planck-Institut für Physik, Munich
August, 1996	CERN Theory Group
June–July, 1996	Aspen Center for Physics
September, 1995	Institute for Theoretical Physics, Univ. of California, Santa Barbara
April, 1995	Weizmann Institute, Rehovot, Israel
Jan.–Sept., 1995	Scientific Associate, CERN Theory Group
August, 1994	Aspen Center for Physics
Jan.–March, 1994	Institute for Theoretical Physics, Univ. of California, Santa Barbara
July, 1993	Aspen Center for Physics
July, 1992	Aspen Center for Physics
July–August, 1991	Aspen Center for Physics
September, 1990	CERN Theory Group
July, 1990	Aspen Center for Physics
March, 1990	Institute for Theoretical Physics, Univ. of California, Santa Barbara
August, 1989	Aspen Center for Physics
September, 1988	Laboratoire de Physique Mathématique, Université des Sciences et Techniques du Languedoc, Montpellier, France
May, 1988	Institute for Theoretical Physics, Univ. of California, Santa Barbara
June, 1987	Theoretische Physik, ETH Hönggerberg, Zurich, Switzerland
April–July, 1985	University of Oregon
1982–present	Visiting Physicist, Theory Group, Stanford Linear Accelerator Center

### **Panels and Working Groups**

2017	co-convener of the Higgs/EW/BSM session of the Americas Workshop on Linear Colliders 2017 (AWLC2017)
2015–2016	co-convener of the Higgs session of the KITP workshop, “Experimental Challenges for the LHC Run II”
2014	co-convener of the Higgs/Electroweak Symmetry Breaking Working Group, Americas Workshop on Linear Colliders (AWLC14)
2014	founding member of the Precision SUSY Higgs Mass Calculation Initiative
2013	co-convener of the Higgs/EWSB Working Group, International Conference on Future Linear Colliders (LCWS-13)
2007	co-convener of the Higgs Working Group for the Workshop on “The LHC early phase for the ILC”
2005–2006	co-convener of the CP violation in 2HDM working group, Workshop on CP Studies and Non-Standard Higgs Physics (CPNSH)
April, 2004	co-convener of the Higgs and Electroweak Symmetry Breaking Working Group, International Conference on Future Linear Colliders (LCWS-04)

2003–2004	co-editor of the LHC/ILC Study Group
2000–2004	co-convener of the Higgs Working Group, American Linear Collider Physics Group
July, 2001	co-convener of the Snowmass 2001 Working Group on Electroweak Symmetry Breaking
October, 1998	co-convener of the “Is it really top? Is it only top?” Discussion Group, Top-Quark Physics for Tevatron Run II Thinkshop
March–Dec., 1998	co-convener of the Higgs Working Group, Tevatron Run II Workshop
June–July, 1996	co-convener of the Light Higgs Boson Working Group, Snowmass Workshop on New Directions for High Energy Physics
1995	co-convener of the Higgs Boson Working Group, European Workshop on Future $e^+e^-$ Linear Colliders
1994–1995	co-convener of the <i>Electroweak Symmetry Breaking and Beyond the Standard Model Working Group</i> , for the DPF Long Range Planning Study
1990–1991	member of SLAC working group on the Next Linear Collider
January, 1989	co-leader of <i>Higgs Boson Working Group</i> at the Workshop on High Energy Physics Phenomenology, Tata Institute for Fundamental Research, Bombay, India
1987–1988	member of SLAC panel studying Opportunities and Requirements for Experimentation at a Very High-Energy $e^+e^-$ Collider
July, 1987	co-leader of <i>Non-minimal Higgs Boson Working Group</i> at the 1987 Berkeley Workshop on the SSC
March–Aug., 1985	leader of <i>Beyond the Standard Model Working Group</i> at the 1985 Oregon Workshop on Supercollider Physics
June–July, 1984	leader of <i>New W’s and Z’s Working Group</i> at the 1984 Snowmass Workshop on the SSC

### Conferences and Workshops Organized

2015	Chairman of the Pre-SUSY 2015 Symposium on Supersymmetry and Unification of Fundamental Interactions at UC Davis
2015	Chairman of the SCIPP Reunion Theory Symposium
2014–2015	Member of the Local Organizing Committee of the 23rd International Conference on Supersymmetry and the Unification of Fundamental Interactions (SUSY 2015)
2014	co-convener of the Higgs Physics parallel sessions of the 37th International Conference on High Energy Physics (ICHEP-2014)
August, 2013	Aspen Center for Physics, co-organizer of the Workshop on Implications of LHC Higgs-Like Signals
2013	Member, Local Organizing Committee, Meeting of the Division of Particles and Fields of the American Physical Society (DPF 2013)
2012	co-organizer of Higgs Identification, KITP Rapid Response workshop, December 10–21, 2012 in Santa Barbara, CA
2011	Member, Program Committee for the International Workshop on Future Linear Colliders (LCWS11)

2010 Member, Local Organizing Committee of the 18th International Conference on Supersymmetry and the Unification of Fundamental Interactions (SUSY 2010)

2010 Chairman, West Coast LHC Theory meeting at UCSC, May 21, 2010

2007 Member, Program Committee, American Linear Collider Physics Group Workshop 2007 (ALCPG07)

January, 2007 Co-organizer of the Kane Symposium (in honor of Gordon Kane's 70th Birthday), University of Michigan, Ann Arbor, MI, 19–20 January 2007

2006–2007 Member, Program Committee, Supersymmetry-2007 Conference, Karlsruhe, Germany

March, 2005 Co-chair of the Workshop on LHC/ILC Synergies, SLAC, Stanford, CA, 23 March 2005

2001–2002 Co-chair, Theoretical Advanced Study Institute (TASI-2002), Boulder, CO, 3–28 June 2002

2001–2002 Member, International Scientific Advisory Committee for the SUSY-02 Conference

July, 2001 Aspen Center for Physics, co-organizer of the Workshop on Electroweak Symmetry Breaking and TeV scale physics after LEP

1999–2000 Chairman, 5th International Symposium on Radiative Corrections (RADCOR 2000), Carmel, CA 11–15 September 2000

January, 1999 Co-chair, Parallel Session on Physics Beyond the Standard Model, DPF-99 Conference at UCLA

1998–1999 member, local organizing committee for the 1999 Lepton-Photon International Conference, Stanford University 9–14 August 1999

August, 1997 Aspen Center for Physics, co-organizer of the Workshop on New Physics at the Tevatron and LEP-2

1996–1997 member, International Scientific Advisory Committee for the SUSY-97 Conference

July–August, 1994 Aspen Center for Physics, co-organizer of the Workshop on Supersymmetry

February, 1994 Co-chairman of the Workshop on Electroweak Symmetry Breaking and TeV Scale Physics, held at the Institute for Theoretical Physics, Santa Barbara.

January, 1993 Aspen Winter Conference: Particle Physics from Supercolliders to the Planck Scale, Co-chairman of conference.

December, 1992 Workshop on Electroweak Symmetry Breaking at Colliding-Beam Facilities, Chairman of the workshop, held at U.C. Santa Cruz

July–August, 1991 Aspen Center for Physics, co-organizer of the Workshop on CP Violation and Heavy Flavor Physics

January, 1990 Meeting of the Division of Particles and Fields of the American Physical Society, Rice University, Houston, convener of Beyond the Standard Model mini-conference

August, 1988 24th International Conference on High Energy Physics, Munich, organizer of Beyond the Standard Model parallel session

January, 1988 U.C. Davis Workshop on Higgs Boson Physics, held at U.C. Davis, member of local organizing committee

June-July, 1986	Theoretical Advanced Study Institute, held at U.C. Santa Cruz, member of local organizing committee and editor of Proceedings
August, 1985	Gordon Conference on Particle Physics, organizer of the Electroweak Theory Session
August, 1984	Physics in Collision IV, held at U.C. Santa Cruz, member of local organizing committee
March, 1983	Theoretical Symposium on Intense Sources of High Energy Physics, held at U.C. Santa Cruz, member of local organizing committee and co-editor of Proceedings

### Referee

2011–present	Peer-review Referee for the Israel Science Foundation grant proposals.
1985–present	Peer-review Referee for Department of Energy grant proposals.
1984–present	Peer-review Referee for National Science Foundation grant proposals.
1980–present	Peer-review referee for professional journals: <i>Physical Review Letters</i> , <i>Physical Review D</i> , <i>Physics Letters B</i> , <i>Nuclear Physics B</i> , <i>Physics Reports</i> , <i>Modern Physics Letters A</i> , <i>Zeitschrift für Physik C</i> , <i>European Physical Journal C</i> , <i>JHEP</i> , and <i>Europhysics Letters</i> .

### TEACHING 2019–2020

			Enrollment	Shared?
Fall	Physics 116A	Mathematical Methods in Physics	69	no
	Physics 297B	Independent Study	2	no
Winter	Physics 297B	Independent Study	1	no
	Physics 297C	Independent Study	1	no
Spring	Physics 222	Quantum Field Theory III	4	no
	Physics 297A	Independent Study	1	no
	Physics 297B	Independent Study	1	no

### TEACHING 2018–2019

Summer	Physics 297A	Independent Study	1	no
Fall	Physics 297B	Independent Study	1	no
	Physics 297C	Independent Study	1	no
Winter	Physics 297B	Independent Study	2	no
Spring	Physics 251	Group Theory and Modern Physics	11	no
	Physics 297A	Independent Study	1	no
	Physics 297B	Independent Study	1	no

**TEACHING 2017–2018**

			Enrollment	Shared?
Summer	Physics 297A	Independent Study	1	no
Fall	Physics 297B	Independent Study	1	no
Winter	Physics 215	Introduction to Quantum Mechanics	15	no
	Physics 297A	Independent Study	1	no
	Physics 297B	Independent Study	1	no
Spring	Physics 297A	Independent Study	1	no
	Physics 297B	Independent Study	1	no

**TEACHING 2016–2017**

Fall	Physics 217	Quantum Field Theory I	10	no
Winter	Physics 214	Electromagnetism II	19	no
	Physics 215	Introduction to Quantum Mechanics	21	no
Spring	Physics 251	Group Theory and Modern Physics	14	no

**TEACHING 2015–2016**

Fall	Physics 171	General Relativity	22	no
	Physics 299A	Thesis Research	1	no
Winter	Physics 218	Advanced Quantum Field Theory	9	no

**TEACHING 2014–2015**

Fall	Physics 171	General Relativity	21	no
	Physics 297B	Independent Study	1	no
	Physics 299A	Thesis Research	1	no
	Physics 299B	Thesis Research	1	no
Winter	Physics 218	Advanced Quantum Field Theory	4	no
	Physics 299B	Thesis Research	3	no
Spring	Physics 251	Group Theory and Modern Physics	5	no
	Physics 297A	Independent Study	1	no
	Physics 299B	Thesis Research	2	no

**TEACHING 2013–2014**

			Enrollment	Shared?
Fall	Physics 297A	Independent Study	1	no
	Physics 299B	Thesis Research	2	no
Winter	Physics 297A	Independent Study	1	no
	Physics 299B	Thesis Research	2	no
Spring	Physics 297A	Independent Study	1	no
	Physics 299B	Thesis Research	2	no

**TEACHING 2012–2013**

Fall	Physics 116C	Mathematical Methods in Physics	77	no
	Physics 299A	Thesis Research	1	no
	Physics 299B	Thesis Research	1	no
Winter	Physics 214	Electromagnetism II	7	no
	Physics 297A	Independent Study	3	no
	Physics 299B	Thesis Research	2	no
Spring	Physics 251	Group Theory and Modern Physics	6	no
	Physics 297A	Independent Study	1	no
	Physics 299B	Thesis Research	2	no

**TEACHING 2011–2012**

Fall	Physics 116C	Mathematical Methods in Physics	67	no
	Physics 297A	Independent Study	1	no
	Physics 297B	Independent Study	1	no
Winter	Physics 214	Electromagnetism II	11	no
	Physics 297A	Independent Study	1	no
	Physics 299A	Thesis Research	1	no
Spring	Physics 216	Non-Rel. Quantum Mechanics II	11	no
	Physics 297A	Independent Study	1	no
	Physics 299A	Thesis Research	1	no

**TEACHING 2010–2011**

Fall	Physics 297A	Independent Study	2	no
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			Enrollment	Shared?
Winter	Physics 116A	Mathematical Methods in Physics	77	no
	Physics 297A	Independent Study	1	no
	Physics 297B	Independent Study	1	no
Spring	Physics 251	Group Theory and Modern Physics	7	no
	Physics 297A	Independent Study	2	no
<b>TEACHING 2009–2010</b>				
Fall	Physics 139B	Quantum Mechanics II	13	no
	Physics 291C	Particle Physics Seminar	4	no
Winter	Physics 116A	Mathematical Methods in Physics	69	no
Spring	Physics 216	Non-Rel. Quantum Mechanics II	14	no
	Physics 291C	Particle Physics Seminar	7	no
<b>TEACHING 2008–2009</b>				
Fall	Physics 291C	Particle Physics Seminar	4	no
	Physics 299B	Thesis Research	1	no
Winter	Physics 5B	Introduction to Physics II	151	no
	Physics 299B	Thesis Research	1	no
Spring	Physics 251	Group Theory and Mod. Physics	4	no
	Physics 291C	Particle Physics Seminar	5	no
	Physics 299B	Thesis Research	1	no
<b>TEACHING 2007–2008</b>				
Summer	Physics 299A	Thesis Research	1	no
Fall	Physics 212	Electromagnetism I	13	no
	Physics 291C	Particle Physics Seminar	8	no
	Physics 299B	Thesis Research	2	no
Winter	Physics 5B	Introduction to Physics II	146	no
	Physics 297B	Independent Study	1	no
	Physics 299B	Thesis Research	2	no
Spring	Physics 222	Quantum Field Theory III	6	no
	Physics 297B	Independent Study	1	no
	Physics 299B	Thesis Research	2	no

**TEACHING 2006–2007**

			Enrollment	Shared?
Summer	Physics 299A	Thesis Research	1	no
Fall	Physics 299B	Thesis Research	1	no
	Physics 299C	Thesis Research	1	no
Winter	Physics 214	Electromagnetism II	12	no
	Physics 297B	Independent Study	1	no
	Physics 299B	Thesis Research	1	no
	Physics 299C	Thesis Research	1	no
Spring	Physics 251	Group Theory	7	no
	Physics 297	Independent Study	1	no
	Physics 299	Thesis Research	2	no

**TEACHING 2005–2006**

Summer	Physics 297A	Independent Study	1	no
Fall	Physics 217	Quantum Field Theory I	8	no
	Physics 297B	Independent Study	2	no
Winter	Physics 116A	Mathematical Methods in Physics	62	no
	Physics 297A	Independent Study	1	no
	Physics 297B	Independent Study	2	no
Spring	Physics 222	Quantum Field Theory III	4	no
	Physics 297B	Independent Study	1	no
	Physics 299C	Thesis Research	1	no

**TEACHING 2004–2005**

Fall	Physics 217	Quantum Field Theory I	9	no
	Physics 297	Independent Study	1	no
	Physics 299	Thesis Research	1	no
Winter	Astronomy 202	Electromagnetism and Plasmas	8	no
	Physics 213	Electromagnetism and Plasmas	18	no
	Physics 297	Independent Study	1	no
	Physics 299	Thesis Research	1	no



			Enrollment	Shared?
Spring	Physics 222	Quantum Field Theory III	4	no
	Physics 297	Independent Study	2	no
	Physics 299	Thesis Research	1	no
<b>TEACHING 2003–2004</b>				
Fall	Physics 171	General Relativity	19	no
	Physics 297	Independent Study	1	no
	Physics 299	Thesis Research	1	no
Winter	Physics 214	Electromagnetism II	14	no
	Physics 299	Thesis Research	1	no
Spring	Physics 222	Quantum Field Theory III	10	no
	Physics 299	Thesis Research	1	no
<b>TEACHING 2002–2003</b>				
Fall	Physics 199	Tutorial	1	no
	Physics 297	Independent Study	1	no
Winter	Sabbatical			
	Physics 299	Thesis Research	1	no
Spring	Physics 251	Group Theory	5	no
	Physics 299	Thesis Research	1	no
<b>TEACHING 2001–2002</b>				
Fall	Physics 171	General Relativity	12	no
	Physics 297	Independent Study	1	no
	Physics 299	Thesis Research	1	no
Winter	Sabbatical			
	Physics 297	Independent Study	1	no
	Physics 299	Thesis Research	1	no
Spring	Sabbatical			
	Physics 299	Thesis Research	1	no
<b>TEACHING 2000–2001</b>				
Fall	Physics 217	Quantum Field Theory I	10	no
Winter	Sabbatical			

			Enrollment	Shared?
Spring	Physics 216	Quantum Mechanics II	12	no
	Physics 297	Independent Study	1	no
<b>TEACHING 1999–2000</b>				
Fall	Physics 217	Quantum Field Theory I	2	no
Winter	Physics 112	Therm. and Stat. Mech.	36	no
	Physics 214	Electromagnetism II	10	no
	Physics 297	Independent Study	1	no
Spring	Physics 223	Strong Interactions	5	no
	Physics 199	Tutorial	2	no
<b>TEACHING 1998–1999</b>				
Summer	Physics 299	Thesis Research	1	no
Fall	Physics 299	Thesis Research	1	no
Winter	Physics 112	Therm. and Stat. Mech.	24	no
	Physics 299	Thesis Research	1	no
Spring	Physics 251	Group Theory	5	no
	Physics 299	Thesis Research	1	no
<b>TEACHING 1997-98</b>				
Fall	Physics 212	Electromagnetism I	7	no
	Physics 299	Thesis Research	1	no
Winter	Physics 214	Electromagnetism II	11	no
	Physics 14	Vector Calculus	11	no
	Physics 299	Thesis Research	1	no
Spring	Physics 223	Strong Interactions	3	no
	Physics 299	Thesis Research	1	no
<b>TEACHING 1996–1997</b>				
Fall	Physics 139B	Quantum Mechanics II	5	no
	Physics 297	Independent Study	1	no
Winter	Physics 218	Quantum Field Theory II	5	no
	Physics 299	Thesis Research	1	no

			Enrollment	Shared?
Spring	Physics 222	Electroweak Interactions	8	no
	Physics 299	Thesis Research	1	no
<b>TEACHING 1995–1996</b>				
Fall	Physics 114B	Math. Meth. in Physics II	26	no
	Physics 297	Independent Study	1	no
	Physics 299	Thesis Research	1	no
	Physics 301	Supervised Teaching	1	no
Winter	Physics 218	Quantum Field Theory II	7	no
	Physics 14	Vector Calculus	14	no
	Physics 297	Independent Study	1	no
	Physics 299	Thesis Research	1	no
Spring	Physics 217	Quantum Field Theory I	10	no
	Physics 199	Undergrad. Thesis Research	1	no
	Physics 298	Research Project	1	no
	Physics 299	Thesis Research	1	no
<b>TEACHING 1994–1995</b>				
Fall	Physics 10	Overview of Physics	82	yes
	Physics 114B	Math. Meth. in Physics II	51	no
	Physics 297	Independent Study	3	no
	Physics 298	Research Project	2	no
	Physics 299	Thesis Research	3	no
	Physics 301	Supervised Teaching	1	no
Winter	Sabbatical			
	Physics 298	Research Project	1	no
	Physics 299	Thesis Research	2	no
Spring	Sabbatical			
	Physics 298	Research Project	1	no
	Physics 299	Thesis Research	2	no
<b>TEACHING 1993–1994</b>				
Fall	Physics 215	Quantum Mechanics I	8	no
	Physics 298	Research Project	2	no
	Physics 299	Thesis Research	2	no

			Enrollment	Shared?
Winter	Sabbatical			
	Physics 205	Introduction to Research	7	no
	Physics 297	Independent Study	1	no
	Physics 298	Research Project	2	no
	Physics 299	Thesis Research	3	no
Spring	Physics 223	Strong Interactions	7	no
	Physics 297	Independent Study	1	no
	Physics 298	Research Project	1	no
	Physics 299	Thesis Research	2	no
<b>TEACHING 1992–1993</b>				
Fall	Physics 215	Quantum Mechanics I	18	no
	Physics 298	Research Project	3	no
Winter	Physics 251	Group Theory	9	no
	Physics 297	Independent Study	1	no
	Physics 298	Research Project	1	no
	Physics 299	Thesis Research	2	no
Spring	Physics 3	Concepts of Modern Physics	8	no
	Physics 297	Independent Study	1	no
	Physics 298	Research Project	1	no
	Physics 299	Thesis Research	2	no
	Physics 301	Supervised Teaching	1	no
<b>TEACHING 1991–1992</b>				
Fall	Physics 212	Electromagnetism I	10	no
	Physics 297	Independent Study	6	no
	Physics 298	Research Project	3	no
	Physics 299	Thesis Research	3	no
Winter	Physics 3	Concepts of Modern Physics	25	no
	Physics 297	Independent Study	4	no
	Physics 298	Research Project	3	no
	Physics 299	Thesis Research	2	no
Spring	Physics 217	Quantum Field Theory I	9	no
	Physics 297	Independent Study	1	no
	Physics 298	Research Project	3	no
	Physics 299	Thesis Research	2	no

**TEACHING 1990–1991**

			Enrollment	Shared?
Fall	Physics 212	Electromagnetism I	13	no
	Physics 297	Independent Study	1	no
	Physics 298	Research Project	2	no
	Physics 299	Thesis Research	2	no
Winter	Physics 251	Group Theory	13	no
	Physics 297	Independent Study	1	no
	Physics 298	Research Project	1	no
	Physics 299	Thesis Research	2	no
Spring	Physics 217	Quantum Field Theory I	7	no
	Physics 298	Research Project	2	no
	Physics 299	Thesis Research	2	no

**TEACHING 1989–1990**

Fall	Physics 218	Quantum Field Theory II	6	no
	Physics 297	Independent Study	4	no
	Physics 298	Research Project	3	no
Winter	Physics 216	Quantum Mechanics II	13	no
	Physics 297	Independent Study	4	no
	Physics 298	Research Project	2	no
	Physics 299	Thesis Research	1	no
Spring	Physics 223	Strong Interactions	4	no
	Physics 297	Independent Study	3	no
	Physics 298	Research Project	2	no
	Physics 299	Thesis Research	1	no

**TEACHING 1988–1989**

Fall	Physics 218	Quantum Field Theory II	7	no
	Physics 297	Independent Study	2	no
Winter	Physics 216	Quantum Mechanics II	7	no
	Physics 297	Independent Study	5	no
Spring	Physics 251	Group Theory	9	no
	Physics 297	Independent Study	4	no
	Physics 298	Research Project	2	no

**TEACHING 1987–1988**

			Enrollment	Shared?
Fall	Physics 215	Quantum Mechanics I	11	no
	Physics 297	Independent Study	2	no
Winter	Physics 15	Stat. Physics and Thermo.	35	no
	Physics 297	Independent Study	2	no
	Physics 301	Supervised Teaching	1	no
Spring	Physics 297	Independent Study	1	no

**TEACHING 1986–1987**

Fall	Physics 215	Quantum Mechanics I	8	no
	Physics 297	Independent Study	1	no
	Physics 299	Thesis Research	1	no
Winter	Physics 216	Quantum Mechanics II	7	no
	Physics 297	Independent Study	1	no
	Physics 299	Thesis Research	1	no
Spring	Physics 297	Independent Study	1	no
	Physics 299	Thesis Research	1	no

**TEACHING 1985–1986**

Winter	Physics 223	Strong Interactions	6	no
Spring	Physics 299	Thesis Research	1	no

**TEACHING 1984–1985**

Fall	Physics 139A	Quantum Mechanics I	30	no
	Physics 297	Independent Study	1	no
	Physics 301	Supervised Teaching	1	no
Winter	Physics 139B	Quantum Mechanics II	11	no
	Physics 297	Independent Study	3	no

**TEACHING 1983–1984**

Winter	Physics 290	Special Topics	5	no
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**TEACHING 1982–1983**

Fall	Physics 215	Quantum Mechanics	7	no
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## MISCELLANEOUS UNDERGRADUATE TEACHING

Fall 2005	Physics 10	Overview of Physics	contributing lecture
Fall 2004	Physics 10	Overview of Physics	contributing lecture
Fall 2002	Physics 10	Overview of Physics	contributing lecture
Fall 1993	Physics 10	Overview of Physics	contributing lecture
Fall 1992	Physics 10	Overview of Physics	contributing lecture
Fall 1991	Physics 10	Overview of Physics	contributing lecture
Fall 1990	Physics 10	Overview of Physics	contributing lecture
Fall 1989	Physics 10	Overview of Physics	contributing lecture

## MISCELLANEOUS GRADUATE TEACHING

1990–1993	Co-organizer of Research Opportunities in Physics Seminar Series
1990	Co-founder of Research Opportunities in Physics Seminar Series

## OTHER TEACHING

August 2019	2019 Sorak Symposium	(2 Lectures)
August, 2018	46th SLAC Summer Institute, “Standard Model at 50”	(1 Lecture)
June, 2016	Pre-SUSY 2016	(3 Lectures)
June, 2016	Theoretical Advanced Study Institute, Boulder, Colorado	(4 Lectures)
July, 2012	40th SLAC Summer Institute, “The Electroweak Scale”	(2 Lectures)
September, 2011	IDPASC Higgs School, Foz do Arelho, Portugal,	(2 Lectures)
August, 2008	CERN-Fermilab Hadron Collider Physics Summer School	(2 Lectures)
August, 2004	PSI ZuoZ Summer School on Particle Physics, ZuoZ, Switzerland	(5 Lectures)
June, 2004	Theoretical Advanced Study Institute, Boulder, Colorado	(4 Lectures)
September, 2002	Herbstschule für Hochenergiephysik Maria Laach	(4 Lectures)
June, 2001	Trieste Summer School on High Energy Physics	(4 Lectures)
November, 1999	SCIPP Outreach Physics Workshop	(1 Lecture)
June, 1997	Trieste Summer School in High Energy Physics and Cosmology	(4 Lectures)
July, 1995	Institut für Theoretische Teilchenphysik, Karlsruhe, Germany	(3 Lectures)
July, 1994	Eötvös Summer School Graduate Courses, Budapest, Hungary	(3 Lectures)
August, 1993	XXI SLAC Summer Institute on Particle Physics	(3 Lectures)
June, 1992	Theoretical Advanced Study Institute, Boulder, Colorado	(3 Lectures)
August, 1990	Mt. Sorak Summer School on Theoretical Physics, South Korea	(2 Lectures)
June, 1990	Theoretical Advanced Study Institute, Boulder, Colorado	(6 Lectures)

## PHYSICS COLLOQUIA GIVEN (2009–2020)

Oct. 24, 2017	Does the Higgs boson portend the end of particle physics?	Ohio State University
Oct. 3, 2017	Does the Higgs boson portend the end of particle physics?	National Taiwan Univ.
Nov. 29, 2012	The Higgs Boson Unleashed	UC Santa Cruz
Nov. 19, 2012	The Higgs Boson Unleashed	Univ. Southern Cal.
Oct. 29, 2012	The Higgs Boson Unleashed	Sonoma State Univ.
Nov. 19, 2010	The Higgs Hunter’s Guide at the Dawn of the LHC Era	Univ. Heidelberg
Nov. 5, 2009	The Higgs Hunter’s Guide at the Dawn of the LHC Era	UC Santa Cruz
Oct. 29, 2009	The Higgs Hunter’s Guide at the Dawn of the LHC Era	Cal. Poly State Univ.

## UCSC COURSE WEB PAGES

Spring, 2020	Physics 222	<a href="http://scipp.ucsc.edu/~haber/ph222/">http://scipp.ucsc.edu/~haber/ph222/</a>
Fall 2019	Physics 116A	<a href="http://scipp.ucsc.edu/~haber/ph116A/">http://scipp.ucsc.edu/~haber/ph116A/</a>
Spring, 2019	Physics 251	<a href="http://scipp.ucsc.edu/~haber/ph251/">http://scipp.ucsc.edu/~haber/ph251/</a>
Winter, 2018	Physics 215	<a href="http://scipp.ucsc.edu/~haber/ph215/">http://scipp.ucsc.edu/~haber/ph215/</a>
Spring, 2017	Physics 251	<a href="http://scipp.ucsc.edu/~haber/archives/physics251_17/">http://scipp.ucsc.edu/~haber/archives/physics251_17/</a>
Winter, 2017	Physics 215	<a href="http://scipp.ucsc.edu/~haber/archives/physics215_17/">http://scipp.ucsc.edu/~haber/archives/physics215_17/</a>
Winter, 2017	Physics 214	<a href="http://scipp.ucsc.edu/~haber/ph214/">http://scipp.ucsc.edu/~haber/ph214/</a>
Fall, 2016	Physics 217	<a href="http://scipp.ucsc.edu/~haber/ph217/">http://scipp.ucsc.edu/~haber/ph217/</a>
Winter, 2016	Physics 218	<a href="http://scipp.ucsc.edu/~haber/ph218/">http://scipp.ucsc.edu/~haber/ph218/</a>
Fall, 2015	Physics 171	<a href="http://scipp.ucsc.edu/~haber/ph171/">http://scipp.ucsc.edu/~haber/ph171/</a>
Spring, 2015	Physics 251	<a href="http://scipp.ucsc.edu/~haber/archives/physics251_15/">http://scipp.ucsc.edu/~haber/archives/physics251_15/</a>
Winter, 2015	Physics 218	<a href="http://scipp.ucsc.edu/~haber/archives/physics218_15/">http://scipp.ucsc.edu/~haber/archives/physics218_15/</a>
Fall, 2014	Physics 171	<a href="http://scipp.ucsc.edu/~haber/archives/physics171_14/">http://scipp.ucsc.edu/~haber/archives/physics171_14/</a>
Spring, 2013	Physics 251	<a href="http://scipp.ucsc.edu/~haber/archives/physics251_13/">http://scipp.ucsc.edu/~haber/archives/physics251_13/</a>
Winter, 2013	Physics 214	<a href="http://scipp.ucsc.edu/~haber/archives/physics214_13/">http://scipp.ucsc.edu/~haber/archives/physics214_13/</a>
Fall, 2012	Physics 116C	<a href="http://scipp.ucsc.edu/~haber/ph116C/">http://scipp.ucsc.edu/~haber/ph116C/</a>
Spring, 2012	Physics 216	<a href="http://scipp.ucsc.edu/~haber/ph216/">http://scipp.ucsc.edu/~haber/ph216/</a>
Winter, 2012	Physics 214	<a href="http://scipp.ucsc.edu/~haber/archives/physics214_12/">http://scipp.ucsc.edu/~haber/archives/physics214_12/</a>
Fall, 2011	Physics 116C	<a href="http://scipp.ucsc.edu/~haber/archives/physics116C11/">http://scipp.ucsc.edu/~haber/archives/physics116C11/</a>
Spring, 2011	Physics 251	<a href="http://scipp.ucsc.edu/~haber/archives/physics251_11/">http://scipp.ucsc.edu/~haber/archives/physics251_11/</a>
Winter, 2011	Physics 116A	<a href="http://scipp.ucsc.edu/~haber/archives/physics116A11/">http://scipp.ucsc.edu/~haber/archives/physics116A11/</a>
Spring, 2010	Physics 216	<a href="http://scipp.ucsc.edu/~haber/archives/physics216_10/">http://scipp.ucsc.edu/~haber/archives/physics216_10/</a>
Winter, 2010	Physics 116A	<a href="http://scipp.ucsc.edu/~haber/archives/physics116A10/">http://scipp.ucsc.edu/~haber/archives/physics116A10/</a>
Fall, 2009	Physics 139B	<a href="http://scipp.ucsc.edu/~haber/ph139B/">http://scipp.ucsc.edu/~haber/ph139B/</a>
Winter, 2009	Physics 5B	<a href="http://scipp.ucsc.edu/~haber/ph5B/">http://scipp.ucsc.edu/~haber/ph5B/</a>
Winter, 2008	Physics 5B	<a href="http://scipp.ucsc.edu/~haber/archives/physics5B08/">http://scipp.ucsc.edu/~haber/archives/physics5B08/</a>
Winter, 2006	Physics 116A	<a href="http://scipp.ucsc.edu/~haber/archives/physics116A06/">http://scipp.ucsc.edu/~haber/archives/physics116A06/</a>
Fall, 2003	Physics 171	<a href="http://scipp.ucsc.edu/~haber/archives/physics117_03/">http://scipp.ucsc.edu/~haber/archives/physics117_03/</a>
Fall, 2001	Physics 171	<a href="http://scipp.ucsc.edu/~haber/archives/physics117_01/">http://scipp.ucsc.edu/~haber/archives/physics117_01/</a>
Winter, 2000	Physics 112	<a href="http://scipp.ucsc.edu/~haber/ph112/">http://scipp.ucsc.edu/~haber/ph112/</a>

## THESIS ADVISING

### Advisor of completed Ph.D. Thesis

2015	Laura Fava	“Precision Measurement of the Strong Coupling Constant of the Minimal Universal Extra Dimensions Model Using Like-sign Leptons at the LHC”
2015	Edward Santos	“Renormalization Group Constraints on the Two Higgs Doublet Model”
2009	Deva O’Neil	“Phenomenology of the Basis-Independent CP-Violating Two-Higgs Doublet Model”
2008	John Mason	“Aspects of Supersymmetry Breaking”



2005	Douglas Pahel	“CP violating effects in $W$ and $Z$ boson pair productions at the International Linear Collider in the minimal supersymmetric standard model”
1999	Heather Logan	“Radiative corrections to the $Zb\bar{b}$ vertex and constraints on extended Higgs sectors”
1995	John Hiser	“A Triplet Supersymmetric Model”
1992	Marco Diaz	“Radiative Corrections to Higgs Masses in the MSSM”
1992	Ralf Hempfling	“Radiative Corrections to the Higgs Sector in the Minimal Supersymmetric Model”
1991	Paulo Gomes	“Charged Higgs Decays into $W\gamma$ and $WZ$ in the Minimal Supersymmetric Model”
1987	Kim Griest	“Stable, Heavy, Neutral Particles in the Sun and in Toponium Decay”

### Technical Advisor of Senior Thesis

2016	Jason E. Cohen	“An Exploration of General Relativistic Bending of Light, Lensing and Orbital Motion Through the Presentation of Visual Simulations”
2012	Matthew Stanton	“Vector Boson Scattering Processes at the Upgraded LHC”
2012	Kevin Goldberg	“Let’s Go Sailing!”
2008	James Beacham	“A comparison of the fermionic overlap-Dirac operator and pure gauge field definitions of the quenched topological susceptibility in the Schwinger model”
1998	Jacob Mannix	“Models of Supersymmetry Breaking”
1996	Robert Gingrich	“Particles Leading to Grand Unification”
1987	Michael Bourne	“Non-Relativistic Determination of the Toponium Spectrum and Transmission Rates”
1986	Karl Offen	“The Physics of a Tennis Racket”

### GRADUATE STUDENTS SUPERVISED

2017-present	Eric Shahly
2017-present	Joseph Connell
2013–2016	Laurel Stevenson-Haskins
2009–2015	Edward Santos
2009–2015	Laura Fava
2005–2009	Deva O’Neill
2006–2008	Heath Holguin
2004–2008	John Mason
2001–2005	Douglas Pahel
2001–2002	Fred Cauthen
1998–2000	Erik Kramer
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