



Michael Peskin

Professor of Particle Physics and Astrophysics, Emeritus

 Curriculum Vitae available Online

Bio

BIO

I am a theoretical physicist interested in elementary particles and the fundamental interactions. My main research interests are:

* consequences of the "Standard Model of particle physics"

* precision study of the heaviest known elementary particles - the W and Z bosons, the top quark, and the Higgs boson - to search for clues to new fundamental interactions beyond the Standard Model

* models of such new interactions, especially models with composite or strongly interacting Higgs bosons

* models for the particle that composes the dark matter of the universe

I am the author of a leading theoretical textbook in this area, "An Introduction to Quantum Field Theory", with Daniel Schroeder. Recently, I have written another textbook that emphasizes our experimental knowledge, "Concepts of Elementary Particle Physics".

For further information about my research activities, interests, Stanford courses, and related subjects, please see my web page: <https://s3df.slac.stanford.edu/people/mpeskin/>

ACADEMIC APPOINTMENTS

- Emeritus Faculty, Acad Council, Particle Physics and Astrophysics

BOARDS, ADVISORY COMMITTEES, PROFESSIONAL ORGANIZATIONS

- member, Board of Directors, Annual Reviews, and (currently) co-editor of AR Nuclear and Particle Science, Annual Review, Inc. (1997 - present)

Teaching

COURSES

2025-26

- Quantum Field Theory I: PHYSICS 330 (Aut)

2024-25

- Quantum Field Theory I: PHYSICS 330 (Aut)

2022-23

- Statistical Mechanics: PHYSICS 212 (Aut)

STANFORD ADVISEES

Doctoral Dissertation Reader (AC)

Dimitris Ntounis, Gowri Sundaresan

Publications

PUBLICATIONS

- **What is the Hierarchy Problem?** *NUCLEAR PHYSICS B*
Peskin, M. E.
2025; 1018
- **Status and future plans for C³ R&D** *JOURNAL OF INSTRUMENTATION*
Nanni, E. A., Breidenbach, M., Li, Z., Vernieri, C., Wang, F., White, G., Bai, M., Belomestnykh, S., Bhat, P., Barklow, T., Berg, W. J., Borzenets, V., Byrd, et al
2023; 18 (9)
- **A “Cool” route to the Higgs boson and beyond. The Cool Copper Collider** *JINST - Journal of Instrumentation*
Vernieri, C., Nanni, E., Dasu, S., Peskin, M., Ntounis, D., et al
2023; 18 (07)
- **Dark Matter benchmark models for early LHC Run-2 Searches: Report of the ATLAS/CMS Dark Matter Forum** *PHYSICS OF THE DARK UNIVERSE*
Abercrombie, D., Akchurin, N., Akilli, E., Alcaraz Maestre, J., Allen, B., Gonzalez, B., Andrea, J., Arbey, A., Azuelos, G., Azzi, P., Backovic, M., Bai, Y., Banerjee, et al
2020; 27
- **Dissection of an SO(5) x U(1) gauge-Higgs unification model** *PHYSICAL REVIEW D*
Yoon, J., Peskin, M. E.
2019; 100 (1)
- **Why the angular distribution of the top decay lepton is unchanged by anomalous tbW couplings** *PHYSICS LETTERS B*
Godbole, R. M., Peskin, M. E., Rindani, S. D., Singh, R. K.
2019; 790: 322–25
- **Improved formalism for precision Higgs coupling fits** *PHYSICAL REVIEW D*
Barklow, T., Fujii, K., Jung, S., Karl, R., List, J., Ogawa, T., Peskin, M. E., Tian, J.
2018; 97 (5)
- **Model-independent determination of the triple Higgs coupling at e⁽⁺⁾e⁽⁻⁾ colliders** *PHYSICAL REVIEW D*
Barklow, T., Fujii, K., Jung, S., Peskin, M. E., Tian, J.
2018; 97 (5)
- **Analysis of long-lived particle decays with the MATHUSLA detector** *PHYSICAL REVIEW D*
Curtin, D., Peskin, M. E.
2018; 97 (1)
- **Competing forces in five-dimensional fermion condensation** *PHYSICAL REVIEW D*
Yoon, J., Peskin, M. E.
2017; 96 (11)
- **Revision of the LHCb limit on Majorana neutrinos** *PHYSICAL REVIEW D*
Shuve, B., Peskin, M. E.

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- 2016; 94 (11)
- **On the Trail of the Higgs Boson** *ANNALEN DER PHYSIK*
Peskin, M. E.
2016; 528 (1-2): 20-34
 - **Supersymmetric dark matter in the harsh light of the Large Hadron Collider** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
Peskin, M. E.
2015; 112 (40): 12256-12263
 - **Ken Wilson: Solving the Strong Interactions** *JOURNAL OF STATISTICAL PHYSICS*
Peskin, M. E.
2014; 157 (4-5): 651-665
 - **Summary of Lepton-Photon 2011** *PRAMANA-JOURNAL OF PHYSICS*
Peskin, M. E.
2012; 79 (5): 1169-1214
 - **Simplified models for LHC new physics searches** *JOURNAL OF PHYSICS G-NUCLEAR AND PARTICLE PHYSICS*
Alves, D., Arkani-Hamed, N., Arora, S., Bai, Y., Baumgart, M., Berger, J., Buckley, M., Butler, B., Chang, S., Cheng, H., Cheung, C., Chivukula, R. S., Cho, et al
2012; 39 (10)
 - **Antenna splitting functions for massive particles** *PHYSICAL REVIEW D*
Larkoski, A. J., Peskin, M. E.
2011; 84 (3)
 - **Top quark anomalous couplings at the International Linear Collider** *PHYSICAL REVIEW D*
Devetak, E., Nomerotski, A., Peskin, M.
2011; 84 (3)
 - **Top quark amplitudes with an anomalous magnetic moment** *PHYSICAL REVIEW D*
Larkoski, A. J., Peskin, M. E.
2011; 83 (3)
 - **Spin-dependent antenna splitting functions** *PHYSICAL REVIEW D*
Larkoski, A. J., Peskin, M. E.
2010; 81 (5)
 - **Dark matter and particle physics** *JOURNAL OF THE PHYSICAL SOCIETY OF JAPAN*
Peskin, M. E.
2007; 76 (11)
 - **Determination of dark matter properties at high-energy colliders** *PHYSICAL REVIEW D*
Baltz, E. A., Battaglia, M., Peskin, M. E., Wizansky, T.
2006; 74 (10)
 - **Leptogenesis from gravity waves in models of inflation** *PHYSICAL REVIEW LETTERS*
Alexander, S. H., Peskin, M. E., Sheikh-Jabbari, M. M.
2006; 96 (8)
 - **Contribution from neutrino Yukawa couplings to lepton electric dipole moments** *PHYSICAL REVIEW D*
Farzan, Y., Peskin, M. E.
2004; 70 (9)
 - **Top quarks and electroweak symmetry breaking in little Higgs models** *PHYSICAL REVIEW D*
Perelstein, M., Peskin, M. E., Pierce, A.
2004; 69 (7)
 - **Supersymmetry: the next spectroscopy** *FUNDAMENTAL PHYSICS - HEISENBERG AND BEYOND*

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- Peskin, M. E.
2004: 99-133
- **Numerical problem solving for undergraduate core courses** *COMPUTING IN SCIENCE & ENGINEERING*
Peskin, M. E.
2003; 5 (6): 92-97
 - **Selectron studies at $e(-)e(-)$ and $e(+)e(-)$ colliders** *PHYSICAL REVIEW D*
Feng, J. L., Peskin, M. E.
2001; 64 (11)
 - **How can a heavy Higgs boson be consistent with the precision electroweak measurements? art. no. 093003** *PHYSICAL REVIEW D*
Peskin, M. E., Wells, J. D.
2001; 64 (9)
 - **TeV strings and collider probes of large extra dimensions** *PHYSICAL REVIEW D*
Cullen, S., Perelstein, M., Peskin, M. E.
2000; 62 (5)
 - **Scalar top quark as the next-to-lightest supersymmetric particle** *PHYSICAL REVIEW D*
Chou, C. L., Peskin, M. E.
2000; 61 (5)
 - **Collider signatures of new large space dimensions** *PHYSICAL REVIEW LETTERS*
Mirabelli, E. A., Perelstein, M., Peskin, M. E.
1999; 82 (11): 2236-2239
 - **Transmission of supersymmetry breaking from a four-dimensional boundary** *PHYSICAL REVIEW D*
Mirabelli, E. A., Peskin, M. E.
1998; 58 (6)
 - **Systematics of slepton production in $e(+)e(-)$ and $e(-)e(-)$ collisions** *Electron-Electron Linear Collider Workshop (e(minus) e(minus) 97)*
Peskin, M. E.
WORLD SCIENTIFIC PUBL CO PTE LTD.1998: 2299-2305
 - **Beyond the standard model** *1996 European School of High-Energy Physics*
Peskin, M. E.
C E R N.1997: 49-142
 - **Physics opportunities of $e(+)e(-)$ linear colliders** *ANNUAL REVIEW OF NUCLEAR AND PARTICLE SCIENCE*
Murayama, H., Peskin, M. E.
1996; 46: 533-608
 - **The experimental investigation of supersymmetry breaking** *PROGRESS OF THEORETICAL PHYSICS SUPPLEMENT*
Peskin, M. E.
1996: 507-537
 - **EXOTIC NONSUPERSYMMETRIC GAUGE DYNAMICS FROM SUPERSYMMETRIC QCD** *PHYSICAL REVIEW D*
Aharony, O., Sonnenschein, J., Peskin, M. E., Yankielowicz, S.
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 - **TESTING SUPERSYMMETRY AT THE NEXT LINEAR COLLIDER** *PHYSICAL REVIEW D*
Feng, J. L., Peskin, M. E., Murayama, H., Tata, X.
1995; 52 (3): 1418-1432
 - **VIOLATION OF CPT AND QUANTUM-MECHANICS IN THE $K-0-(K)OVER-BAR-0$ SYSTEM** *NUCLEAR PHYSICS B*
Huet, P., Peskin, M. E.
1995; 434 (1-2): 3-38
 - **PRODUCTION, DECAY, AND POLARIZATION OF EXCITED HEAVY HADRONS** *PHYSICAL REVIEW D*
Falk, A. F., Peskin, M. E.

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- **HADRON-PRODUCTION IN GAMMA-GAMMA-COLLISIONS AS A BACKGROUND FOR E+E- LINEAR COLLIDERS** *PHYSICAL REVIEW D*
Chen, P. S., Barklow, T. L., Peskin, M. E.
1994; 49 (7): 3209-3227
- **COMPUTATION OF MINIJET INCLUSIVE CROSS-SECTIONS** *PHYSICS LETTERS B*
DELDUCA, V., Peskin, M. E., Tang, W. K.
1993; 306 (1-2): 151-157
- **PROBE OF CP VIOLATION IN TOP QUARK PAIR PRODUCTION AT HADRON SUPERCOLLIDERS** *PHYSICAL REVIEW LETTERS*
Schmidt, C. R., Peskin, M. E.
1992; 69 (3): 410-413
- **ESTIMATION OF OBLIQUE ELECTROWEAK CORRECTIONS** *PHYSICAL REVIEW D*
Peskin, M. E., Takeuchi, T.
1992; 46 (1): 381-409
- **THRESHOLD PRODUCTION OF HEAVY TOP QUARKS - QCD AND THE HIGGS BOSON** *PHYSICAL REVIEW D*
Strassler, M. J., Peskin, M. E.
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- **NEW CONSTRAINT ON A STRONGLY INTERACTING HIGGS SECTOR** *PHYSICAL REVIEW LETTERS*
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1990; 65 (8): 964-967
- **N=2 SUPERCONFORMAL SYMMETRY AND SO(2,1) CURRENT-ALGEBRA** *NUCLEAR PHYSICS B*
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- **STRING FIELD-THEORY ON THE CONFORMAL PLANE .2. GENERALIZED GLUING** *NUCLEAR PHYSICS B*
LeClair, A., Peskin, M. E., Preitschopf, C. R.
1989; 317 (2): 464-508
- **STRING FIELD-THEORY ON THE CONFORMAL PLANE .1. KINEMATICAL PRINCIPLES** *NUCLEAR PHYSICS B*
LeClair, A., Peskin, M. E., Preitschopf, C. R.
1989; 317 (2): 411-463
- **COOPER-PAIR MASS** *PHYSICAL REVIEW B*
Cabrera, B., Peskin, M. E.
1989; 39 (10): 6425-6430
- **DELAYED UNITARITY CANCELLATION AND HEAVY PARTICLE EFFECTS IN E+E- \rightarrow W+W-** *NUCLEAR PHYSICS B*
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1988; 309 (2): 221-258
- **ALL FREE STRING THEORIES ARE THEORIES OF FORMS** *NUCLEAR PHYSICS B*
Banks, T., Peskin, M. E., Preitschopf, C. R., FRIEDAN, D., Martinec, E.
1986; 274 (1): 71-92
- **EQUIVALENCE OF THE LIGHT-CONE FORMULATION AND THE GAUGE-INVARIANT FORMULATION OF STRING DYNAMICS** *NUCLEAR PHYSICS B*
Peskin, M. E., Thorn, C. B.
1986; 269 (3-4): 509-529
- **PHYSICS OF E+E- COLLIDERS - PRESENT, FUTURE, AND FAR FUTURE** *AIP CONFERENCE PROCEEDINGS*
Peskin, M. E.
1985: 122-167
- **EXOTIC PROCESSES IN HIGH-ENERGY E-P COLLISIONS** *PHYSICAL REVIEW D*
Bagger, J. A., Peskin, M. E.

1985; 31 (9): 2211-2222

● **SYSTEMATICS OF PI-N SCATTERING IN CHIRAL SOLITON MODELS** *PHYSICAL REVIEW D*

Mattis, M. P., Peskin, M. E.

1985; 32 (1): 58-73

● **AN EFFECTIVE LAGRANGIAN FOR SUPERSYMMETRIC QCD** *AIP CONFERENCE PROCEEDINGS*

Peskin, M. E.

1984: 127-134

● **DIFFICULTIES FOR THE EVOLUTION OF PURE STATES INTO MIXED STATES** *NUCLEAR PHYSICS B*

Banks, T., Susskind, L., Peskin, M. E.

1984; 244 (1): 125-134

● **BOUND-STATE EFFECTS IN UPSILON-JGAMMA + RESONANCE** *PHYSICS LETTERS B*

Pantaleone, J., Peskin, M. E., Tye, S. H.

1984; 149 (1-3): 225-233

● **NEW TESTS FOR QUARK AND LEPTON SUBSTRUCTURE** *PHYSICAL REVIEW LETTERS*

Eichten, E. J., Lane, K. D., Peskin, M. E.

1983; 50 (11): 811-814

● **RAISING THE AXION MASS** *NUCLEAR PHYSICS B*

Holdom, B., Peskin, M. E.

1982; 208 (3): 397-412