CURRICULUM VITA
JOSEPH D. LYKKEN

PRESENT POSITIONS:
Scientist II
Theoretical Physics Department
Fermi National Accelerator Laboratory
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Date of Birth: 6/17/57
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EDUCATION:

- MASSACHUSETTS INSTITUTE OF TECHNOLOGY, Cambridge, MA. Graduated with Ph.D. degree in physics, 1982.
- UNIVERSITY OF MINNESOTA, Minneapolis, MN. Graduated with B.A. degree in physics, June 1977.

PREVIOUS POSITIONS:

- University of Wisconsin at Madison, 2000.
- Santa Cruz Institute for Particle Physics, 1987-1989.
- Los Alamos National Laboratory, 1985-1987.
- City College of CUNY, 1983-1985.
- University of Texas at Austin, 1982-1983.

RECENT ACTIVITIES:

- Vice-chair, Division of Particles and Fields, American Physical Society.
- Fermilab Physics Advisory Committee (2000-2004).
- HEPAP Quantum Universe Committee (2003-2004).
- URA Fermilab Director Search Committee (2004).
- Advisory Board and Steering Committee, Kavli Center for Theoretical Physics (2004-).
- SLAC Experimental Program Advisory Committee (2001-2003).
- Scientific Secretary, Aspen Center for Physics (2002-2003).
- Co-organizer, Aspen Winter Conference on Particle Physics (2002).
- Co-organizer, ITP miniprogram on the Braneworld (2002).
- DOE/NSF HEPAP Subpanel on Long Range Planning (2000-2001).
- Local advisory group and Associate, Center for Cosmological Physics.
- Co-director TASI 2001 Summer School.
- Snowmass 2001 Organizing Committee.
- Muon Collider Technical Advisory Committee (MUTAC).
- Chair of organizing committee for the SUSY 99 conference at Fermilab, 14-19 June 1999.
- Co-organizer for the "HEMC'99" high energy muon collider workshop at Montauk, 27 Sept - 1 Oct 1999.
- Visiting expert, National Science Foundation (1998-1999).
- Co-organizer of the Tevatron Run II Supersymmetry/Higgs Workshop (1998).
- Fellow, American Association for the Advancement of Science (AAAS).
- Fellow, American Physical Society (APS).

RECENT TALKS:

- "Phenomenology of beyond the standard model searches", Physics at LHC, Vienna, Jul 2004.
- "An experimental program for extra dimensions", CMS PRS BSM, CERN, Jul 2004, KITP Collider Conference, Santa Barbara, Jan 2004.
- "Summary talk", Johns Hopkins Workshop, Jun 2004.
- "The search for extra dimensions", public lecture, Fermilab, May 2004.
- "Mysteries of extra dimensions", plenary talk, APS April Meeting, Philadelphia, April 2003.
- "The physics of extra dimensions", AAAS 2003 Annual Meeting, Denver, Feb 2003.
- "From strings to extra dimensions", PierreFest, Univ. of Florida, Jan 2003.
- "CPT violation and neutrinos", Dirac symposium, Florida State Univ., Dec 2002.
- "Visions of particle physics", summary talk at DPF 2002, Williamsburg, May 2002.
- "The search for extra dimensions", colloquium at UC Santa Cruz, Univ. of Kansas, Univ. of Waterloo, Univ. of Washington, Ohio State University, Northwestern University, Cornell University, Univ. of Chicago, Univ. of Arizona, Univ. of Wisconsin, Argonne National Lab, and the Rutherford Lab, 1999 - 2004.
- "Many dimensions of particle physics", Physics for Everyone lecture, Fermilab, Mar 2002.
- "Invasions in particle physics", public lecture (with Maria Spiropulu), Aspen, Feb 2002.
- "Beyond the Standard Model", Chicago Linear Collider Workshop, Jan 2002.

- Reverse summary talk, Conference on Higgs and Supersymmetry, LAL Orsay, Mar 2001.
- "Beyond four dimensions", AAAS 2001 Annual Meeting, San Francisco, Feb 2001.
- "Strings 2001", Aspen Winter Workshop on Particle Physics at the Millennium, January 7 - 13, 2001.
- "The Search for maximal weirdness", LCWS 2000 Workshop, Fermilab, Oct 2000.
- "A practical guide to higher dimensional quantum gravity", RADCOR 2000 symposium, Carmel, Sept 2000.
- "Beyond the Standard Model: Theory", DPF 2000 conference, Columbus, Aug 2000.
- "Phenomenology of extra dimensions", SUSY2K conference, CERN, July 2000.
- "High energy physics for the nu century", summary talk at PHENO 2000, Madison, 17-19 April 2000.
- "Run II physics", presentation to HEPAP, Fermilab, March 2000.
- "Infinite extra dimensions", Talk at the Aspen Winter Conference on Particle Physics, Jan 2000.
- "New wrinkles in extra dimensions", invited talk at the ITP New Dimensions conference, Santa Barbara, and at the PASCOS 99 conference, Lake Tahoe, November+December 1999.
- "Physics needs for future accelerators", plenary talk at XIX International Lepton-Photon Symposium, Stanford, August 1999.
- "Planckian democracy", talk at the Fermilab GSA New Perspectives conference, Fermilab, July 1999.
- "Particle physics beyond the MSSM", plenary talk at Inner Space/ Outer Space II, Fermilab, May 1999.

- "Physics of large extra dimensions", and "Summary of the Run II Workshop", plenary talks at the XXXIVth Recontres de Moriond on Electroweak Interactions and Unified Theories, Les Arcs, March 1999.

TEACHING EXPERIENCE:

- SLAC summer institute, SLAC, 2004.
- Quantum Field Theory III (P445), University of Chicago, 2004.
- Particle Physics (P363), University of Chicago, 2002 and 2003.
- String Theory (Physics 805), University of Wisconsin at Madison, 2000.
- CTEQ summer school, Madison, June 2002.
- KIAS summer school, Seoul, June 1998.
- TASI summer school, Boulder, 1996, 2000, and 2001.
- ICTP summer school, Trieste, July 1995.
- Lectured 3 years at the Fermilab Saturday Morning Physics program.
- Lectured 2 years at the DOE High School Honors program at Fermilab.
- Lectured at the Topics in Modern Physics National Institute at Fermilab for high school teachers.
- Two semesters graduate quantum mechanics and field theory courses, U.C. Santa Cruz, 1988-89.
- Teaching Assistant at M.I.T. for graduate courses and undergraduate labs.

PUBLICATIONS

1. P. Kumar and J. Lykken, *"Visible sector supersymmetry breaking revisited"*, arXiv:hep-ph/0401140 (to appear in JHEP).

2. D.J.H. Chung, L.L. Everett, G.L. Kane, S.F. King, J. Lykken and Lian-Tao Wang, *"The soft supersymmetry breaking lagrangian: theory and applications*, arXiv:hep-ph/0312378 (to appear in Physics Reports).

3. G. Barenboim and J. Lykken, *"Supersymmetry does not imply mass degeneracy"*, Phys. Lett. B **583**, 304 (2004) [arXiv:hep-ph/0303238].

4. M. Carena and J. Lykken, editors, *"Physics at Run II: the Supersymmetry/Higgs Workshop"*, Fermilab-Pub-02-329-T, 610 pages.

5. G. Barenboim, L. Borissov and J. Lykken, *"CPT violating neutrinos in the light of KamLAND"*, arXiv:hep-ph/0212116.

6. I. Gogoladze, J. Lykken, C. Macesanu and S. Nandi, *"Implications of a massless neutralino for neutrino physics"*, Phys. Rev. D **68**, 073004 (2003) [arXiv:hep-ph/0211391].

7. G. Barenboim and J. Lykken, *"A model of CPT violation for neutrinos"*, Phys. Lett. B **554**, 73 (2003) [arXiv:hep-ph/0210411].

8. G. L. Kane, J. Lykken, S. Mrenna, B. D. Nelson, L. T. Wang and T. T. Wang, *"Theory-motivated benchmark models and superpartners at the Tevatron"*, Phys. Rev. D **67**, 045008 (2003) [arXiv:hep-ph/0209061].

9. G. L. Kane, J. Lykken, B. D. Nelson and L. T. Wang, *"Re-examination of electroweak symmetry breaking in supersymmetry and implications for light superpartners"*, Phys. Lett. B **551**, 146 (2003) [arXiv:hep-ph/0207168].

10. G. Barenboim, L. Borissov and J. Lykken, *"Neutrinos that violate CPT, and the experiments that love them"*, Phys. Lett. **534B** (2002) 106.

11. S. Ozaki *et al.*, *"Feasibility study–II of a muon–based neutrino source"*, BNL-52623.

12. G. Barenboim, L. Borissov, J. Lykken and A. Y. Smirnov, *"Neutrinos as the messengers of CPT violation"*, arXiv:hep-ph/0108199.

13. J. D. Lykken, *"Disappearing Dimensions"*, Nature, **412** (2001) 130.

14. T. Abe *et al.* [American Linear Collider Working Group Collaboration], *"Linear collider physics resource book for Snowmass 2001"*, in *Proc. of the APS/DPF/DPB Summer Study on the Future of Particle Physics (Snowmass 2001)* ed. R. Davidson and C. Quigg, SLAC-R-570.

15. J. D. Lykken, *"Physics of extra dimensions"*, Prepared for Theoretical Advanced Study Institute in Elementary Particle Physics (TASI 2000): Flavor Physics for the Millennium, Boulder, Colorado, 4-30 Jun 2000.

16. M. Carena, A. Delgado, J. Lykken, S. Pokorski, and C.E.M. Wagner, *"Brane effects on extra dimensional scenarios: A tale of two gravitons"*, Nucl. Phys. **B609** (2001) 499.

17. C. Albright et al, *"Physics at a Neutrino Factory"*, hep-ex/0008064.

18. J. Lykken, R. Myers, and Jing Wang, *"Gravity in a Box"*, JHEP **0009** (2000) 009.

19. V. Barger, T. Han, T. Li, J. Lykken, and D. Marfatia, *"Cosmology and Hierarchy in Stabilized Warped Brane Models"*, Phys. Lett. **488B** (2000) 97.

20. The SUGRA Working Group collaboration, *"Report of the SUGRA Working Group for Run II of the Tevatron"*, hep-ph/0003154.

21. D. Ayres *et al.* [Neutrino Factory and Muon Collider Collaboration], *"Expression of interest for R&D towards a neutrino factory based on a storage ring and a muon collider"*, archiv:physics/9911009.

22. J. Lykken and K. Matchev, *"Tau Jet Signals for Supersymmetry at the Tevatron"*, hep-ex/9910033.

23. R. Demina, J. Lykken, K. Matchev, and A. Nomerotski, *"Stop and Sbottom Searches in Run II of the Fermilab Tevatron"*, Phys. Rev. **D62** (2000) 035011.

24. J. Lykken and S. Nandi, *"Asymmetrical Large Extra Dimensions"*, Phys. Lett. **485B** (2000) 224.

25. M. Brhlik, L. Everett, G. Kane, and J. Lykken, *Superstring Theory and CP Violating Phases: Can They Be Related?"*, Phys. Rev. **D62** (2000) 035005.

26. J. Lykken and Lisa Randall, *"The Shape of Gravity"*, JHEP **0006** (2000) 014.

27. M. Brhlik, L. Everett, G. Kane, and J. Lykken, *"A Resolution to the Supersymmetric CP Problem with Large Soft Phases via D-branes"*, Phys. Rev. Lett. **83** (1999) 2124.

28. J. Lykken and Konstantin Matchev, *"Supersymmetry Signatures with Tau Jets at the Tevatron"*, Phys. Rev. **D61** (2000) 015001.

29. J. Lykken, *"New and Improved Superstring Phenomenology"*, astro-ph/9903026, proceedings of the COSMO 98 conference, Asilomar, CA, Nov 1998.

30. C. Ankenbrandt et al, *"Status of Muon Collider Research and Development and Future Plans"*, Phys. Rev. ST Accel.Beams **2** (1999) 081001.

31. T. Han, J. Lykken, and R-J Zhang, *"On Kaluza-Klein States from Extra Dimensions"*, Phys. Rev. **D59** (1999) 105006.

32. J. Lykken, E. Poppitz, and S. Trivedi, *"Branes with GUTS and Supersymmetry Breaking"*, Nucl. Phys. **B543** (1999) 105.

33. J. Lykken, E. Poppitz, and S. Trivedi, *"M(ore) on Chiral Gauge Theories from D-Branes"*, Nucl. Phys. **B520** (1998) 51.

34. J. Lykken, *"Sparticle Masses from Kinematic Fitting at a Muon Collider"*, hep-ph/9803427, proceedings of the 4th International Conference on the Physics Potential and Development of MuMu Colliders (MUMU97), San Francisco, CA, 10-12 Dec 1997.

35. J. Lykken, T. Montroy, and S. Willenbrock, *"Group Theoretic Evidence for SO(10) Grand Unification"*, Phys. Lett. **418B** (1998) 141.

36. G. Anderson et al, *"Summary of the Very Large Hadron Collider Physics and Detector Workshop"*, FERMILAB-CONF-97-318-T.

37. J. Lykken, E. Poppitz, and S. Trivedi, *"Chiral Gauge Theories and D-Branes"*, proceedings of the International Workshop on Phenomenological Aspects of Superstring Theories (PAST 97), Trieste, Italy, 2-4 Oct 1997.

38. J. Lykken, E. Poppitz, and S. Trivedi, *"Chiral Gauge Theories from D-Branes"*, Phys. Lett. **416B** (1998) 286.

39. M. Demarteau et al, *"Precision Measurements of Heavy Objects Working Group Summary"*, contributed to the Very Large Hadron Collider Physics and Detector Workshop: Beyond the LHC, Batavia, IL, 13-15 Mar 1997; hep-ph/9708331.

40. J. Lykken, *"Introduction to Supersymmetry"*, Lectures at the Theoretical Advanced Study Institute (TASI 96):Fields, Strings, and Duality, Boulder, CO, Jun 2 - 28, 1996.

41. J. Lykken, *"Z' Bosons and Supersymmetry"*, proceedings of the 1996 DPF/DPB Summer Study on New Directions for High Energy Physics (Snowmass 96), Snowmass, CO, Jun 25 - Jul 12, 1996.

42. G. Anderson et al, *"Motivations for and Implications of Nonuniversal GUT Scale Boundary Conditions for Soft SUSY Breaking Parameters"*, proceedings of the 1996 DPF/DPB Summer Study on New Directions for High Energy Physics (Snowmass 96), Snowmass, CO, Jun 25 - Jul 12, 1996.

43. J. Amundson et al, *"Report of the Supersymmetry Theory Subgroup"*, proceedings of the 1996 DPF/DPB Summer Study on New Directions for High Energy Physics (Snowmass 96), Snowmass, CO, Jun 25 - Jul 12, 1996.

44. J. Lykken, *"String Model Building in the Age of D Branes"*, proceedings of 4th International Conference on Supersymmetries in Physics (SUSY 96), College Park, MD, May 29 - Jun 1, 1996.

45. J. Lykken, *"Weak Scale Superstrings"*, Phys. Rev. **D54** (1996) 3693.

46. J. Lykken, *"Four-Dimensional Superstring Models"*, Lectures at the Trieste High Energy Physics and Cosmology Summer School, Trieste, Italy, Jun 12 -Jul 28, 1995.

47. S. Chaudhuri, George Hockney, and J. Lykken, *"Three Generations in the Fermionic Construction"*, Nucl. Phys. **B469** (1996) 357.

48. S. Chaudhuri, George Hockney, and J. Lykken, *"Maximally Supersymmetric String Theories in $D < 10$"*, Phys. Rev. Lett. **75** (1995) 2264.

49. Shyamoli Chaudhuri, Stephen-wei Chung, George Hockney, and J. Lykken, *"String Consistency for Unified Model Building"*,Nucl. Phys. **B456** (1995) 89.

50. Shyamoli Chaudhuri, Stephen-wei Chung, and J. Lykken, *"Fermion Masses from Superstring Models with Adjoint Scalars"*, proceedings of the 2nd IFT Workshop on Yukawa Couplings and the Origins of Mass, Gainesville FL, Feb. 1994.

51. J. Lykken and Scott Willenbrock, *"Planck Scale Unification and Dynamical Symmetry Breaking"*, Phys. Rev. **D49** (1994) 4902.

52. H. Dykstra, J. Lykken, and E. Raiten, *"Exact Path Integrals by Equivariant Localization"*, Phys. Lett. **302B** (1993) 223.

53. S. Chaudhuri and J. Lykken, *"Stringy Black Holes via Coset Current Algebra"*, contribution to the 7th Meeting of the American Physical Society Division of Particles and Fields, Fermilab, Nov. 1992; DPF Conf.1992:1572-1575.

54. S. Chaudhuri and J. Lykken, *"String Theory, Black Holes, and SL(2,R) Current Algebra"*, Nucl. Phys. **B396** (1993) 270.

55. R. K. Ellis, C. T. Hill, and J. Lykken (eds.), *"Perspectives in the Standard Model"*, Proceedings of the 1991 Theoretical Advanced Study Institute in Elementary Particle Physics, World Scientific (Singapore) 1992.

56. S.P. De Alwis and J. Lykken, *"2-d Gravity and the Black Hole Solution in 2-d Critical String Theory"*, Phys. Lett. **B269** (1991) 264.

57. S. Chaudhuri, H. Dykstra, and J. Lykken, *"Multicut Criticality in the Penner Model and $c = 1$ Strings"*, Proceedings of the XXth International Conference on Differential Geometric Methods in Theoretical Physics, New York, 1991.

58. S. Chaudhuri, H. Dykstra, and J. Lykken, *"The Penner Matrix Model and $c = 1$ Strings"*, Mod. Phys. Lett. **A6** (1991) 1665.

59. J. Lykken, J. Sonnenschein, and N. Weiss, *"The Theory of Anyonic Superconductivity: A Review"*, Int. J. Mod. Phys. **A6** (1991) 5155.

60. S. Chaudhuri and J. Lykken, *"Analyzing the Solutions of Hermitian Matrix Models"*, Nucl. Phys. **B367** (1991) 614.

61. S. Chaudhuri, J. Lykken, and T.R. Morris, *"Bigeneric Nonperturbative Strings"*, Phys. Lett. **251B** (1990) 393.

62. J. Lykken, *"Chern-Simons and Anyonic Superconductivity"*, contribution to the "Strings 90" Superstring Workshop, Texas A& M University, 1990.

63. J. Lykken, J. Sonnenschein, and N. Weiss, *"Field Theoretic Analysis of Anyonic Superconductors"*, Int. J. Mod. Phys. **A6** (1991) 1335.

64. J. Lykken, J. Sonnenschein, and N. Weiss, *"Anyonic Superconductivity"*, Phys. Rev. **D42** (1990) 2161.

65. T. Banks and J. Lykken, *"Landau-Ginzburg Description of Anyonic Superconductors"*, Nucl. Phys. **B336** (1990) 500.

66. T. Banks and J. Lykken, *"String Theory and Two-Dimensional Quantum Gravity"*, Nucl. Phys. **B331** (1990) 173.

67. L. Dixon, M. Peskin, and J. Lykken, *"$N = 2$ Superconformal Symmetry and $SO(2,1)$ Current Algebra"*, Nucl. Phys. **B325** (1989) 329.

68. S. Kalara and J. Lykken, *"New Calabi-Yau Manifolds from Weighted Hypersurfaces and Nonminimal $N = 2$ Superconformal Models"*, Nucl. Phys. **B325** (1989) 183.

69. J. Lykken, *"Finitely-Reducible Realizations of the $N = 2$ Superconformal Algebra"*, Nucl. Phys. **B313** (1989) 473.

70. M. Kaku and J. Lykken, *"Modular Invariant Closed String Field Theory"*, Phys. Rev. **D38** (1988) 3067.

71. J. Lykken, *"The Signature of E_6 in Precision Measurements of $Sin^2\theta_w$"*, Phys. Lett. **193B** (1987) 123.

72. J. Lykken, *"An E_6 Extension of the Standard Model"*, Contribution to LAMPF proposal to DOE for the Large Cerenkov Detector, Expt. 1015, 1987.

73. J. Lykken and S. Raby, *"Non-Commutative Geometry and the Closed Bosonic String"*, Contributed to the 23rd International Conference on High Energy Physics, Berkeley, 1986.

74. G.T. Horowitz, J. Lykken, R. Rohm, and A. Strominger, *"Purely Cubic Action for String Field Theory"*, Phys. Rev. Lett. **57** (1986) 283.

75. J. Lykken, *"Bosonic String Field Theory and Non-Commutative Geometry"*, Proceedings of Montreal Workshop on Infinite Dimensional Lie Algebras and their Applications, (1986).

76. J. Lykken and S. Raby, *"Introduction to String Field Theory"*, Proceedings of Utah State Theoretical Physics Workshop, Logan, 1986.

77. J. Lykken and S. Raby, *"Non-Commutative Geometry and the Closed Bosonic String"*, Nucl. Phys. **B278** (1986) 256.

78. M. Kaku and J. Lykken, *"The Fissioning Universe: Topological Inflation and Kaluza-Klein Cosmologies"*, Nucl. Phys. **B268** (1986) 489.

79. M. Kaku and J. Lykken, *"Supergauge Field Theory of Superstrings"*, Proceedings of Argonne Symposium on Anomalies, Geometry, and Topology, 1985.

80. J. Lykken and F. Quevedo, *"Stable Hierarchies in O'Raifeartaigh Models Coupled to $N = 1$ Supergravity"*, Phys. Rev. **D29** (1984) 293.

81. L. Hall, J. Lykken, and S. Weinberg, *"Supergravity as the Messenger of Supersymmetry Breaking"*, Phy. Rev. **D27** (1983) 2359.

82. J. Lykken, *"Baryons in a Large N Matrix Model"*, Phys. Rev. **D25** (1982) 1653.

83. D. Lykken, W. Iacono, and J. Lykken, *"Measuring Deviant Eye Tracking"*, Schizophrenia Bull. **7** (1981) 205.

84. J. Lykken, *"Baryons in a Large N Matrix Model"*, Proceedings of Brown Workshop on QCD, 1981.

85. L. Krauss and J. Lykken, *"QCD_2 and the Classical Correspondence in the Large N Limit"*, Phys. Lett. **105B** (1981) 397.

86. J. Lykken and A. Strominger, *"Spin from Isospin in $SU(5)$"*, Phys. Rev. Lett. **44** (1980) 1175.