Curriculum Vitae – Albion Lawrence

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Born March 29, 1969 in Berkeley, CA

Citizenship U.S.A.

Degrees granted

The University of Chicago	Ph.D. in Physics, 1996. Thesis: "On the target space geometry of $N = (2,1)$ string theory". Advisor: Prof. Emil Martinec.
University of California, Berkeley	A.B. in Physics with highest honors and highest distinction in general scholarship, 1991. Thesis: "Neutrino optics and coherent flavor oscillations". Advisor: Prof. Mahiko Suzuki.

Academic appointments

July 2009-present	Associate Professor, Brandeis University.
2002-2009	Assistant Professor, Brandeis University.
1999-2002	Postdoctoral Research Associate, Stanford Linear Accelerator Center and Physics Department, Stanford University.
1996-1999	Postdoctoral Fellow, Harvard University.
1994-1996	Research Assistant to Prof. Emil Martinec, The University of Chicago.
1991-1994	NSF Graduate Fellow, The University of Chicago.
1989-1991	Undergraduate Research Assistant to Prof. Paul Richards, UC Berkeley and Lawrence Berkeley National Laboratory.
Summer 1988	Undergraduate Research Assistant to Prof. William Molzon, University of California, Irvine.

Teaching experience

August 2002-present	Brandeis University. Instructor, graduate and undergraduate quantum mechanics, quantum field theory, cosmology.
Winter 1995	Teaching assistant to Prof. Reindardt Oehme, graduate quantum mechanics.

Awards and Honors

Fall 2006	Kavli Frontier Fellow
2004-present	DOE Outstanding Junior Investigator award.
1991-1994	NSF Graduate Fellowship.
Spring 1990	Inducted into Phi Beta Kappa.
1987-1991	Regent's Scholar, UC Berkeley.

Grants

2007-present	Supported by DOE grant DE-FG02-92ER40706.
2004-present	DOE Outstanding Junior Investigator award, "String theory and the macroscopic world".
2003-2006	Principal/sole investigator for National Science Foundation grant PHY-0331516, "Short distances in string theory".

Long-term visits

Feb. and April 2009	Member, Kavli Institute for Theoretical Physics, UC Santa Barbara
Dec. 2007-Jan.2008	Weizmann Institute of Science.
Dec. 2007	Participant, String Cosmology program, Kavli Institute for Theoretical Physics – China (Beijing, China).
May-June 2007	Visitor, CEA Saclay, Gif-sur-Yvette, France.
Aug.-Dec. 2006	Member, Kavli Institute for Theoretical Physics, UC Santa Barbara
May-July 2005	Participant, Fields Institute thematic program on the Geometry of String Theory", Fields Institute (Toronto, Canada)/Perimeter Institute (Waterloo, Canada).
June 2004	Weizmann Institute of Science
Oct.-Nov. 2003	Member, Institute for Theoretical Physics, UC Santa Barbara.
March 2001	The Center for Geometry and Theoretical Physics, Duke University.
March 2000 and Nov. 2001	The Enrico Fermi Institute, The University of Chicago.
Nov.-Dec. 1999, Jan.-Feb. 2001	Member, Institute for Theoretical Physics, UC Santa Barbara.
Fall 1999	Member, School of Natural Sciences, the Institute for Advanced Study.
Feb. 1999 and April 2000	Rutgers University.
Nov. 1998	UC Santa Barbara.

Professional activities

Ongoing	Member of the American Physical Society.
Ongoing	Referee for Physical Review Letters, Physical Review D, and the Journal of High Energy Physics.
Ongoing	Reviewer for the National Science Foundation.
April 2009 - present	Member, organizing committee, 2010 IPM String School (ISS2009), Tehran, Iran, April 2010.
April 2008 - 2009	Member, organizing committee, 2009 IPM String School (ISS2009), Tehran, Iran, April 2009.
April 2007 - 2008	Member, organizing committee, 2008 IPM String School (ISS2008), Isfahan, Iran (April 9-17, 2008).
April 2006-2007	Member, organizing committee, 2007 IPM String School (ISS2007), Tehran, Iran (April 9-18, 2007).
Jan. 2005-April 2006	Member, organizing committee, 2006 IPM String School (ISS2006), Tehran, Iran (April 11-19, 2006).

Fall 2003-present	Member, organizing committee, 2005 IPM String School (ISS2005), Qeshm, Iran (Jan. 5-14, 2005).
2003-present	Ongoing participant in "Theorynet", an NSF program sending high energy theorists to speak at local high schools.
2003	Member, organizing committee, 2003 IPM String School (ISS2003), Anzali, Iran (Sept. 29-Oct 9, 2003).
April 2003	Chairman for the invited session "DPF: Progress and prospects in string theory". Co-organizer (with V. Balasubramanian, U. Penn) for that session and for the focus session on string theory.

Undergraduate Students Supervised

1. Ian Shoemaker, 2004-2005, Brandeis U. Thesis title: "Decoherence and Inflation". (Now a physics graduate student at UC Los Angeles).
2. Matthew Roberts, 2004-2005, Brandeis U. Thesis title: "PT-symmetric quantum mechanics". (Now a physics graduate student at UC Santa Barbara).
3. Benson Way, 2007-2008, Brandeis U. Thesis title: "Axion constraints and string-wall dynamics". (Now physics graduate student at UC Santa Barbara).
4. Kabir Husain, 2008-2009. "Semiclassical and quantum dynamics of the Coulomb potential in one dimension".

Graduate Students Supervised

1. Tobias Sander, Brandeis U (entered 2002). PhD, 2007. Current employment: dFine Consulting, Germany.
2. Nathaniel Reden, Brandeis U. 2005-present.

Postdocs supervised

1. Dr. Martin Kruczenski (PhD, Buenos Aires U., Argentina), 2003-2005. Current employment: assistant professor of physics, Purdue Univ.
2. Dr. Amit Sever (PhD, Hebrew U., Israel), 2005-2008. Now a postdoc at the Perimeter Institute for Theoretical Physics, Waterloo, Canada.
3. Dr. Hajar Ebrahim (PhD IPM, Tehran, Iran), 2008-present.

Conference/workshop talks

Jan. 2009	Simons Center for Geometry and Physics, workshop on Kähler geometry and Extremal Metrics. Talk: "Holographic RG in Lorentzian signature."
Jun. 2008	Aspen Center for Physics, Aspen, CO. Talk: "Fluxes, torsion, and supersymmetry breaking".
Apr. 2008	ISS 2008 school and workshop, Isfahan, Iran. Three lectures: "Supersymmetry breaking and its mediation".
Mar. 2008	Spring 2008 Mitchell Institute Workshop, "String Theory: LHC Physics and Cosmology", Texas A& M University. Talk: "Fluxes, torsion, and supersymmetry breaking".
Dec. 2007	String cosmology program, KITPC, Beijing, China. Lecture: "Fayet-Iliopoulos D-terms in string theory and cosmology".
Dec. 2007	String cosmology program, KITPC, Beijing, China. Two lectures: "Time dependence, 2d renormalization group flows, and dimensional duality."
Feb. 2007	DESY Workshop on Generalized Geometries and FLux Compactifications, Hamburg, Germany. Talk title: "Torsion and soft SUSY breaking."
Dec. 2006	Southern California String Seminar, UC Los Angeles. Talk: "Torsion and soft SUSY breaking"
Nov. 2006	Kavli Frontiers of Science meeting, National Academy of Sciences, Irvine, CA. Poster/flash presentation: "Spacetime without points: how geometry is encoded and generalized in string theory"
Oct. 2006	Joint Meeting of Pacific Regional Particle Physics Commmunities (APS-DPF2006), Honolulu, HI. Talk: "Non-geometric vacua".
Sept. 2006	McGill Workshop on singularity resolution in string theory. Talk: "RG flow and closed string tachyon condensation".
Aug. 2006	KITP conference on String Phenomenology, UC Santa Barbara. Talk: "Non-geometric vacua".
April 2006	ISS2006 string theory school, Tehran, Iran. Lectures: "Introduction to flux compactifications".
Jan. 2005	ISS2005 string theory school, Qeshm, Iran. Lectures: "D-branes on Calabi-Yau backgrounds."
Sept. 2004	Quantum Particles and Fields workshop in Baku, Azerbaijan. Two talks: "Explicit Supersymmetry Breaking in Local String Models", and "Small black holes and long strings in the AdS/CFT correspondence".
August 2004	PASCOS 04 conference, Boston , MA. Talk: "D-terms, D-strings, and Decoupling."
July 2004	*Strings @ CERN* conference and workshop. Talk: "Local string models of soft supersymmetry breaking".
Nov. 2003	PIMS/UBC Pacific Northwest String Seminar, Vancouver, Canada. Talk: "Local string models of soft supersymmetry breaking".

Sept.-Oct. 2003	ISS 2003 string theory school, Anzali, Iran. Lectures: "Introduction to Cosmology"
Sept. 2003	3rd International Symposium on Quantum Theory and Symmetry, Cincinnati, OH. Talk: "Local models of SUSY breaking in string theory".
April 2003	April 2003 APS/DPF meeting, Philadelphia, PA. Talk: "Generic e ects of short distance physics on CMBR anisotropies".
March 2003	Davis Meeting on Cosmic Inflation, Davis, CO. Talk: "Short-distance physics and the CMBR".
Sept. 2002	Cosmo '02 meeting, Chicago, IL. Talk: "Signatures of short-distance physics in the CMBR."
Summer 2001	Aspen Center for Physics, Aspen, CO. Talk: "D-branes and derived categories."
Summer 2001	Park City Mathematics Institute, Park City, UT. Research program: "The geometry in supergravity." Talk: "Black holes and attractors on moduli space."
Summer 2000	Aspen Center for Physics, Aspen, CO. Talk: "Closed Strings from Tachyon Condensation".
Summer 1999	Amsterdam string theory workshop, University of Amsterdam, the Netherlands. Talk: "D-branes on Calabi-Yau threefolds."
Summer 1998	Aspen Center for Physics, Aspen, CO. Talk: "Holography and locality."

Invited Seminars, Fall 2002-present

June 2009	Perimeter Institute string theory seminar, "Insightful D-branes".
May 2009	MIT, string theory lunch club, "Insightful D-branes".
Apr. 2009	University of Southern California, high energy theory seminar, "Looking inside black hole horizons with D-brane probes".
Apr. 2009	KITP, UC Santa Barbara, "Seeing behind the horizon of a black hole".
Feb. 2009	California Institute of Technology, high energy theory seminar, "Gauge theory on compact hyperbolic spaces and their gravitational duals".
Oct. 2008	Amherst College, Physics Dept. colloquium, "String Theory and Gravity"
Sep. 2008	U Mass Lowell, Physics Dept. colloquium, "String Theory and the Early Universe".
Sep. 2008	Brandeis University physics colloquium, "(De)constructing spacetime in string theory".
Mar. 2008	Theoretical physics seminar, McGill University: "Dimensional duality".
Feb. 2008	Theory seminar, Stanford University: "Fluxes, torsion, and supersymmetry breaking".
Jan. 2008	Theory seminar, University of New Hampshire-Durham: Dimensional Duality".
Jan. 2008	Joint Jersualem-Tel Aviv-Weizmann theoretical physics seminar, Neve Shalom,Israel: "Dimensional Duality".
Jan. 2008	Ben-Gurion University seminar: "Fayet-Iliopoulos D-terms in string theory and cosmology".
Jan. 2008	Weizmann Institute of Science seminar, "Fluxes, torsion, and supersymmetry breaking".
Oct. 2007	Brown University string theory seminar, "Dimensional Duality".
Oct. 2007	NYU high energy physics seminar, "Dimensional duality".
May 2007	Paris joint string Theory seminar, Institut Henri Poincaré, "Dimensional Duality"
Apr. 2007	Harvard duality seminar. "Dimensional Duality".
Dec. 2006	KITP, UC Santa Barbara, "Torsion and soft SUSY breaking".
Nov. 2006	California Institute of Technology, "Holography and Renormalization in Lorentzian Signature"
Sept. 2006	University of Toronto/Fields Institute, "Holography and Renormalization in Lorentzian Signature".
Mar. 2006	University of Utah, Salt Lake City, UT, "D-branes in nongeometric backgrounds".
Mar. 2006	Brown University,"On closed string tachyon dynamics".

Feb. 2006	Joint Theory Seminar, Harvard University, "2d RG flow and closed string tachyon dynamics".
Jan. 2006	Enrico Fermi Institute, The University of Chicago, "Closed string tachyon dynamics".
Dec. 2005	Stanford University Institute for Theoretical Physics, "Closed string tachyon dynamics and worldsheet RG."
Dec. 2005	UC Davis, "Closed string tachyon dynamics and worldsheet RG".
Dec. 2005	University of Pennsylvania, "Worldsheet RG and closed string tachyon dynamics".
Oct. 2005	Duke University, Center for Geometry and Theoretical Physics, "Closed string tachyon dynamics".
June 2005	Fields Institute for Research in the Mathematical Sciences, University of Toronto, "Worldsheet RG and target space time evolution".
May 2005	Perimeter Institute for Theoretical Physics, "Worldsheet RG and target space time evolution".
May 2005	Stanford University Institute for Theoretical Physics, "Worldsheet RG flow and target space time evolution".
Apr. 2005	University of Utah, Salt Lake City, UT, "Worldsheet RG flow and target space time evolution".
Apr. 2005	University of Southern California, "Worldsheet RG and target space time evolution".
Apr. 2005	Carnegie Observatories, Pasadena, CA, "String Theory".
Mar. 2005	University of New Hampshire, Durham, "Worldsheet RG and target space time evolution".
Feb. 2005	Duke University, Center for Geometry and Theoretical Physics, "Worldsheet RG and target space time evolution".
Nov. 2004	Harvard Duality Seminar, "Soft SUSY breaking and FI terms in type II models."
June 2004	Joint Israeli High Energy Theory Seminar, Neve Shalom, Israel, "$N = 2$ to $N = 1$ to $N = 0$ in local string models".
April 2004	Stanford Linear Accelerator Center, "$N = 2$ to $N = 1$ to $N = 0$ in local string models".
Dec. 2003	Carnegie-Mellon University, "Initial conditions for inflation".
Nov. 2003	U.C. Berkeley, "Local models of soft SUSY breaking in string theory".
Nov. 2003	Kavli Institute for Theoretical Physics (KITP), UC Santa Barbara, "The quantum to classical transition in inflation".
May 2003	The University of Chicago, "Local models of soft SUSY breaking in string theory".
May 2003	University of Illinois at Urbana-Champaign, "Local models of soft SUSY breaking in string theory".
April 2003	Caltech, "Nature abhors a(lpha) vacua".
April 2003	University of Toronto/Fields Institute, "Local models of soft SUSY breaking in string theory".

Mar. 2003	Harvard University, "Local models of soft SUSY breaking in string theory".
Mar. 2003	Brown University, "Signatures of short-distance physics in the CMBR."
Oct. 2002	The Perimeter Institute, Waterloo, Canada, "Signatures of short-distance physics in the CMBR"
Oct. 2002	UT Austin, "Signatures of short-distance physics in the CMBR."
Sept. 2002	MIT/Boston-area Joint Theory Seminar, "Signatures of short-distance physics in the CMBR".

Publications

1. Albion Lawrence and Emil J. Martinec, "Black hole evaporation along macroscopic strings" ;hep-th/9312127, *Phys. Rev.* **D50** (1994) 2680.

2. Albion Lawrence and Emil J. Martinec, "String field theory in curved spacetime and the resolution of spacelike singularities"; hep-th/9509149, *Class. Quant. Grav.* **13** (1996) 63.

3. Albion Lawrence, "The target space geometry of N=(2,1) string theory"; hep-th/9605223, U. Chicago Ph.D. thesis, *Class. Quant. Grav.* **14** (1997) 309.

4. Albion Lawrence and Nikita Nekrasov, "Instanton sums and five-dimensional gauge theories"; hep-th/9706025, *Nucl. Phys.* **B513** (1998) 239.

5. Shamit Kachru, Albion Lawrence and Eva Silverstein, "On the matrix description of Calabi-Yau compactifications"; hep-th/9712223, *Phys. Rev. Lett.* **80** (1998) 2996. See also the description in "Physical Review Focus", http://focus.aps.org/v1/st7.html.

6. Albion Lawrence, Nikita Nekrasov and Cumrun Vafa, "On conformal field theories in four dimensions"; hep-th/9803015, *Nucl. Phys.* **B533** (1998) 199.

7. Vijay Balasubramanian, Per Kraus and Albion Lawrence, "Bulk vs. boundary dynamics in anti-de Sitter spacetimes"; hep-th/9805171, *Phys Rev.* **D59** (1999) 046003.

8. Vijay Balasubramanian, Per Kraus, Albion Lawrence and Sandip Trivedi, "Holographic probes of anti-de Sitter spacetimes"; hep-th/9808017, *Phys Rev.* **D59** (1999) 104021.

9. Vijay Balasubramanian, Steven B. Giddings and Albion Lawrence, "What do CFTs tell us about anti-de Sitter spacetimes?"; hep-th/9902052, *J. High. Energy Phys.* **0003** (1999) 001.

10. Ilka Brunner, Michael R. Douglas, Albion Lawrence and Christian Römelsberger, "D-branes on the quintic"; hep-th/9906200, *J. High. Energy. Phys.* **0008** (2000) 015.

11. Shamit Kachru, Sheldon Katz, Albion Lawrence and John McGreevy, "Open string instantons and superpotentials"; hep-th/9912151, *Phys. Rev.* **D62** (2000) 026001.

12. Shamit Kachru, Sheldon Katz, Albion Lawrence and John McGreevy, "Mirror symmetry for open strings"; hep-th/0006047, *Phys. Rev.* **D62** (2000) 126005.

13. Matthew Kleban, Albion Lawrence and Stephen Shenker, "Closed strings from nothing"; hep-th/0012081, *Phys. Rev.* **D64** (2001) 066002.

14. Paul S. Aspinwall and Albion Lawrence, "Derived categories and zero-brane stability"; hep-th/0104147, *J. High. Energy. Phys.* **0108** (2001) 004.

15. Savas Dimopoulos, Shamit Kachru, Nemanja Kaloper, Albion Lawrence and Eva Silverstein, "Small numbers from tunnelling between brane throats"; hep-th/0104239, *Phys. Rev.* **D64** (2001) 121702.

16. Savas Dimopoulos, Shamit Kachru, Nemanja Kaloper, Albion Lawrence and Eva Silverstein, "Generating small numbers by tunnelling in multithroat compactifications"; hep-th/0106128, *Int. J. Mod. Phys.* **A19** (2004) 2657.

17. Simeon Hellerman, Shamit Kachru, Albion Lawrence and John McGreevy, "Linear sigma models for open strings"; hep-th/0109069, *J. High. Energy Phys.* **0207** (2002) 002.

18. Nemanja Kaloper, Matthew Kleban, Albion Lawrence and Stephen Shenker, "Signatures of short distance physics in the cosmic microwave background radiation"; hep-th/0201158, *Phys. Rev.* **D66** (2002) 123510.

19. Albion Lawrence, "On the stability of three-dimensional null singularities"; hep-th/0205288, *J. High. Energy Phys.* **0211** (2002) 019.

20. Nemanja Kaloper, Matthew Kleban, Albion Lawrence, Stephen Shenker and Leonard Susskind, "Initial Conditions for Inflation", hep-th/0209231, *J. High Energy Phys.* **0211** (2002) 037.

21. Albion Lawrence and John McGreevy, "Local string models of soft supersymmetry breaking"; hep-th/0401034, *J. High Energy Phys.* **0406** (2004) 007.

22. Albion Lawrence and John McGreevy, "Remarks on branes, fluxes and soft SUSY breaking"; hep-th/0401233, published in the proceedings of the 3rd International Symposium on Quantum Theory and Symmmetries (QTS3), Cincinnati, Ohio.

23. Albion Lawrence and John McGreevy, "D-terms and D-strings in open string models"; hep-th/0409284, *J. High Energy Phys.* **0410** (2004) 056.

24. Martin Kruczenski and Albion Lawrence, "Random walks and the Hagedorn transition", hep-th/0510126, *J. High Energy Phys.* **0607:031** (2006).

25. Daniel Z. Freedman, Matthew Headrick, and Albion Lawrence, "On closed string tachyon dynamics", hep-th/0508126 (2005), *Phys. Rev.* **D73** (2006) 066015.

26. Albion Lawrence, Michael B. Schulz, and Brian Wecht, "D-branes in nongeometric backgrounds", hep-th/0602025, *J. High Energy Phys.* **0607:038** (2006).

27. Albion Lawrence and Amit Sever, "Holography and renormalization in Lorentzian signature", hep-th/0606022, *J. High Energy Phys.* **0610:013** (2006).

28. Matthias Gaberdiel and Albion Lawrence, "Bulk perturbations of $N = 2$ branes", hep-th/0702036, *J. High Energy Phys.* **0705:087** (2007).

29. Daniel Green, Albion Lawrence, John McGreevy, David R. Morrison, and Eva Silverstein, "Dimensional Duality", arXiv:0705.0550 [hep-th], *Phys. Rev.* **D76** (2007) 066004.

30. Albion Lawrence and Amit Sever, "Scattering of twist fields from D-branes and orientifolds", arxiv:7076.3199 [hep-th], *J. High Energy Phys.* **0709:094** (2007).

31. Albion Lawrence, Tobias Sander, Michael B. Schulz, and Brian Wecht, "Torsion and supersymmetry breaking", arxiv:0711.4787. *J. High Energy Phys.* **0807:042** (2008).

32. Albion Lawrence, "F-term SUSY breaking and moduli", arxiv:0808.1126, *Phys. Rev.* **D79** (2009) 101701.

33. Gary Horowitz, Albion Lawrence, and Eva Silverstein, "Insightful D-branes", arxiv:0904.3922.