Jacob Lewis Bourjaily

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Education:

Princeton University, Princeton, New Jersey, USA.
Ph.D. in Theoretical Physics, in progress.
M.A. in Physics, January 2008.

University of Cambridge, Trinity College, Cambridge, UK.
Certificate of Advanced Studies in Mathematics, June 2006.

University of Michigan, Ann Arbor, Michigan, USA.
B.S. with Highest Honors in Physics, Mathematics, April 2005.

Academic Honors and Awards:

Marshall Scholarship 2005
For study of Mathematics and Physics at the University of Cambridge

National Science Foundation Graduate Research Fellowship 2005

Barry M. Goldwater Scholarship 2004

Best Student, Erice International School of Subnuclear Physics 2004

Paul A. M. Dirac Diploma, Erice International School of Subnuclear Physics 2004

Best Presentation of a Theoretical Subject, Erice International School of Subnuclear Physics 2004
For the research talk, Determining the Actual Local Density of Dark Matter

Honorary Cambridge Overseas Trust Scholar 2005

Writ and Mary Cornwell Scholarship, University of Michigan Department of Physics 2005
Awarded to the most outstanding graduating student in physics

Margaret Hunt Scholarship, College of Literature Science and the Arts, University of Michigan 2003
Covering full tuition and most of my living expenses throughout my undergraduate education

Otto Graf Scholarship, University of Michigan Honors Program 2004

Frank C. Mock Fellowship, University of Michigan Department of Physics 2004

Arthur B. Singleton Distinguished Class Prize, University of Michigan College of Engineering 2003
Awarded to the most outstanding first year student at the College of Engineering

Roger B. Chaffee Astronaut Memorial Scholar 2002
Awarded to the most outstanding beginning college student of math or science from West Michigan

Kikuchi Memorial Scholar, U of M Department of Nuclear Engineering and Radiological Sciences 2003
Awarded to the most outstanding [second] year student in Nuclear Engineering

Elks National Foundation Most Valuable Student Scholar 2002

Outstanding Achievement in Mathematics Award, U of M Department of Mathematics 2005

Continuous Merit Scholar, U of M Department of Nuclear Engineering and Radiological Sciences 2004

American Nuclear Society Scholar 2003

Nuclear Engineering Fellowship, United States Department of Energy 2003

National Academy for Nuclear Training Scholarship 2003

University of Michigan Alumni Association Scholarship 2003

University of Michigan Club of Grand Rapids Scholarship 2002

James B. Angell Scholar, University of Michigan 2004

William J. Branstrom Freshman Prize, University of Michigan 2003

George M. Landes Prize for Technical Communication (Second Place) 2003
For the report, Artificial Retina and Intraocular Implants

University of Michigan Regents Merit Scholar 2002

Thomas Strach Award for Excellence in Amateur Astronomy 2002
An exceptional honor of the Grand Rapids Amateur Astronomical Association

Eagle Scout, Boy Scouts of America 2000

Research Publications:

J. Bourjaily, *Effective Field Theories for Local Models in F-Theory and M-Theory*, [arXiv:0905.0142].
J. Bourjaily, *Local Models in F-Theory and M-Theory with Three Generations*, [arXiv:0901.3785].
J. Bourjaily and S. Espahbodi, *Geometrically Engineerable Chiral Matter in M-Theory*, [arXiv:0804.1132].
J. Bourjaily, *Unfolding Geometric Unification in M-Theory*, [arXiv:0706.3364].
J. Bourjaily, *Geometrically Engineering the Standard Model: Locally Unfolding Three Families out of E8*, Phys. Rev. D76:045004, 2007. [arXiv:0704.0445].
J. Bourjaily, *Multiple Unfoldings of Orbifold Singularities: Engineering Geometric Analogies to Unification*, Phys. Rev. D.79:046005, 2009. [arXiv:0704.0444].
J. Bourjaily, G. Kane, P. Kumar, and T. Wang, *Outside the mSUGRA Box*, [arXiv:hep-ph/0504170].
J. Bourjaily, G. Kane, *What is the Cosmological Significance of a Discovery of Wimps at Colliders or in Direct Experiments?*, [arXiv:hep-ph/0501262].
J. Bourjaily, *Determining the Actual Local Density of Dark Matter Particles*, Eur. Phys. J. C Direct, 2005. Reprinted in "Erice ISSP 2004: How and Where to Go Beyond the Standard Model," ed. A. Zichichi. [arXiv:astro-ph/0410470].
J. Bourjaily, *Weighing the Dark Matter Halo*, "IDM 2004: The 5th International Workshop on the Identification of Dark Matter," eds. N. Spooner et al. [arXiv:astro-ph/0411409].

Conferences, Workshops, Schools, and Invited Talks:

Cook's Branch Workshop, Cook's Branch Conservatory, Texas, March 2009.
String Duality Seminar, Harvard University, Cambridge, February 2009.
Presented *Local Models in F-Theory and M-Theory with Three Generations.*
Winter School in Theoretical Physics, Institute for Advanced Studies, Jerusalem, Israel, January 2009.
Stringy Reflections on the LHC, Clay Mathematics Institute, Cambridge, October 2008.
Strings 2008, CERN, Genève, Switzerland August 2008.
String Phenomenology 2008, CERN Theory Institute, Genève, Switzerland, August 2008.
Simons Workshop in Mathematics and Physics 2008, Stony Brook, July 2008.
Cargèse Summer School 2008, Cargèse, Corsica, June 2008.
Invited Seminar, The Ohio State University, Columbus, May 2008.
Presented *Local Model Building in M-Theory.*
Invited Seminar, Institute for Advanced Study, Princeton, May 2008.
Presented *Local Phenomenological Models in M-Theory.*
String Vacuum Project Workshop, Tucson, April 2008.
Presented *Locally Engineerable Phenomenological Models in M-Theory.*
Simons Workshop in Mathematics and Physics 2007, Stony Brook, August 2007.
Presented *Building Phenomenological Models in M-Theory.*
Invited Seminar, Michigan Center for Theoretical Physics, Ann Arbor, August 2007.
Les Houches Summer School 2007: String Theory and the Real World, Les Houches, France, July 2007.
Strings 2007, Madrid, Spain, June 2007.
Physics and Mathematics of G_2 Compactifications, Ann Arbor, April 2007.
Presented *Geometrically Engineering the Standard Model in M-theory.*
Physics at the LHC, Princeton, March 2007.
Axions at the IAS, Institute for Advanced Study, Princeton, October 2006.
International School for Subnuclear Physics 2006, Erice, Sicily, September 2006.
Attended as an Invited Scientist.
LHC Inverse Workshop, Ann Arbor, April 2006.
Invited Seminar, Case Western Reserve, Cleveland, September 2005.
Presented *What is the Cosmological Significance of a Dicovery of Wimps at Colliders or in Direct Experiments?*
Les Houches Summer School 2005: Physics Beyond the Standard Model, Les Houches, August 2005.
Prospects in Theoretical Physics 2005, Institute for Advanced Study, Princeton, July 2005.
Theoretical Advanced Study Institute 2005, Boulder, June 2005.
Phenomenology 2005, University of Wisconsin, Madison, May 2005.
Presented *Outside the mSUGRA Box.*
KICP Seminar, University of Chicago, February 2005.
Presented *What is the Cosmological Significance of a Dicovery of Wimps at Colliders or in Direct Experiments?*

MCTP Colloquium, University of Michigan, Ann Arbor, November 2004.
Presented *What is the Cosmological Significance of a Discovery of Dark Matter Particles?*
TeV4LHC Workshop, Fermilab, September 2004.
International Workshop on the Identification of Dark Matter, IDM2004, Edinburgh, September 2004.
Presented *Weighing the Dark Matter Halo with Colliders and Detectors.*
International School of Subnuclear Physics 2004, Erice, Sicily, August 2004.
Presented *Calculating the Actual Local Density of Dark Matter Particles.*
Physics at the LHC, Vienna, Austria, July 2004.
Strings at CERN, Genève, Switzerland, July 2004.
Strings 2004, Paris, France, June 2004.
Dark Side of the Universe Workshop, Ann Arbor, May 2004.
Nonperturbative Quantum Gravity, Marseille, France, May 2004.

Employment and Teaching Experience:

Associate Instructor, September 2006 to present.
Princeton University, Princeton, New Jersey.

Relativistic Quantum Field Theory II, Spring term 2008.
Gave supplementary lectures and graded for Professor Gubser's course on Advanced Quantum Field Theory.

Future Physics, Fall term 2006 to present.
Gave substitute precept lectures, taught laboratory sections, and graded for Professor Steinhardt's course *Future Physics*, a physics course designed for non-science majors.

Science and Mathematics Tutor, Fall 2008 to present.
Brattle Street Coaching, New York, New York.

Trinity College Library Clerk, January to July 2006.
Trinity College, Cambridge University, Cambridge, UK.

Organic Chemistry Laboratory Teaching Assistant, April to August 2002.
Calvin College, Department of Chemistry and Biochemistry, Grand Rapids, Michigan.
Assisted Professors Luben and Piers administer Organic Chemistry I and II laboratory coursework for spring and summer semesters. This included explaining reaction procedures and equipment to students, grading laboratory reports, and running sensitive tests for students including Nuclear Magnetic Resonance Spectroscopy, Gas Chromatography Mass Spectroscopy, and Infrared Spectroscopy.

Planetarium Lecturer, Producer, and Technician, December 1999 to April 2004.
Roger B. Chaffee Planetarium at the Public Museum of Grand Rapids, Michigan.
Prepared and delivered weekly astronomy lectures to the public and college students; produced intricate, multi-technology entertainment and educational shows; and authored hundreds of three-dimensional visual sequences for the planetarium's Digistar II star projector.

Professional and Honorary Societies:

Michigan Center for Theoretical Physics, Associate Member
American Physical Society, Member
American Mathematical Society, Member
Mathematical Association of America, Member
American Association of Physics Teachers, Member
American Nuclear Society, former Member
American Chemical Society, former Affiliate
Phi Bet Kappa National Honor Society, Member—inducted while a Junior
Sigma Pi Sigma, National Physics Honor Society, Member
Alpha Nu Sigma, National Honor Society for Nuclear Science, Member