A. Garrett Lisi Garrett.Lisi@gmail.com

EDUCATION

9/91-5/99 University of California, San Diego
5/99 Ph.D. in Physics
G.P.A. - 3.9
Honors Fellowships - UC Regents fellowship, ARCS Foundation fellowship.

9/86-6/91 University of California, Los Angeles
6/91 B.S. in Physics and B.S. in Mathematics
G.P.A. - 3.9 (4.0 in Physics and 4.0 in Mathematics)
Academic Honors - Phi Beta Kappa, Sigma Pi Sigma, Golden Key.
Graduation Honors - College Honors, Highest Honors in Physics, Highest Honors in Mathematics, Summa Cum Laude, Kinsey Prize for The Outstanding Graduating Senior in Physics.

RESEARCH IN THEORETICAL PHYSICS

5/99- Independent Research
My research involves the application of differential geometry in theoretical physics. I am particularly interested in the geometric interpretation of spinor fields, and ultimately the description of all fields and methods of general relativity, the standard model of particle physics, and quantum field theory within a unified geometric framework (see publications). This research has been funded by grants from FQXi, Submeta, and other private sources.

9/92-12/98 Graduate Student Researcher, UCSD Physics Department
Dissertation research included the disparate subjects of quantum field theory, under the supervision of Roger Dashen, and turbulent boundary layer flows, under the supervision of Henry Abarbanel. Areas of special focus were: nonlinear dynamics and chaos, differential geometry, mechanical simulation, advanced numerical methods, spinor field dynamics, general relativity, and fluid dynamics.

9/89-9/90 Undergraduate Student Researcher, UCLA Physics Department
Supercomputer simulations of electromagnetic scattering and ionospheric modification, under the supervision of George Morales.

INSTRUCTION EXPERIENCE

1/05-12/05 Lecturer in Physics, University of Hawaii Maui College
Taught several introductory college physics courses and consistently received the highest ratings from students.

11/03-4/04 Snowboarding Instructor, Breckenridge, Colorado

10/99-7/00 Staff Member, Sudbury Maui School
This school, modeled after the Sudbury Valley School in Massachusetts, was run by and for the students—ages five through sixteen. As an elected staff member it was my role to act as a resource for student-initiated learning and assist in the operation of the school.

9/91-6/98 Teaching Assistant, UCSD Physics Department
Lecturer, discussion leader, and course coordinator for upper and lower division university physics courses in mechanics, electromagnetism, solid state physics, fluid dynamics, relativity, thermodynamics, and quantum mechanics.

9/89-6/91 Physics and Math Tutor, UCLA Athletic Tutorial Unit

SCIENTIFIC CONSULTING

Throughout my career in research and education I have made full use of the technological tools available and developed strong expertise in advanced problem solving, the invention of mathematical algorithms, and complex calculations. I have programmed in C, Objective C, Python, Fortran, Pascal, Basic, Lisp, etc., as well as in a wide range of application-specific interpretive languages such as Mathematica, Maple, MatLab, Javascript, and html. I am most familiar with Unix-based operating systems, but am comfortable working within any computing environment. My extensive background in science, education, and computing enables me to be very effective in addressing the complex social as well as technological needs of those wishing to solve hard problems. My clients and projects have included:

6/11-12/11 History
Host of Invention USA.

5/05-1/06 Peletex, Inc.
Research and development for aqueous-froth air filter.

5/03-10/04 Revelations Entertainment
Script consultant for "Rendezvous with Rama," in coordination with UCSD professor Andrew Kahng.

12/01-9/02 Prolific Publishing, Inc.
Invented AI algorithms and conducted detailed probabilistic analysis for hybrid video poker games developed by Prolific.

SELECTED PUBLICATIONS

A. Lisi, "An Explicit Embedding of Gravity and the Standard Model in E8," AMS ConM, **557**, 231 (2011), arXiv:1006.4908.

A. Lisi and J. Weatherall, "A Geometric Theory of Everything," Scientific American, **303**, 54 (2010).

A. Lisi, L. Smolin, and S. Speziale, "Unification of gravity, gauge fields, and Higgs bosons," J. Phys. A, **43**, 445401 (2010), arXiv:1004.4866.

A. Lisi, "An Exceptionally Simple Theory of Everything," arXiv:0711.0770.

A. Lisi, "Quantum mechanics from a universal action reservoir," physics/0605068.

A. Lisi, "Clifford bundle formulation of BF gravity generalized to the standard model," gr-qc/0511120.

A. Lisi, "Clifford Geometrodynamics," gr-qc/0212041.

A. Lisi, "Drag Reduction over Dolphin Skin via the Pondermotive Forcing of Vortex Filaments," physics/9907041.

A. Lisi, "It's All in GR: Spinors, Time, and Gauge Symmetry," gr-qc/9804033.

A. Lisi, "A Solitary Wave Solution of the Maxwell-Dirac Equations," J. Phys. A., **28**, 5385 (1995), hep-th/9410244.

H. Abarbanel, A. Lisi, A. Rouhi, and J. Wright, "Vortex Filament Stability and Boundary Layer Dynamics," Phys. Rev. E, **50**, 1206 (1994).

(publications available via online preprint archive at http://arxiv.org/)

SELECTED CONFERENCE, COLLOQUIUM, AND PUBLIC PRESENTATIONS

Digital October, 5/21/2012, Moscow, virtual. Invited talk: "A Geometric Theory of Everything."

Orange Coast College, 5/11/2011, Costa Mesa, California. Public talk: "A Geometric Theory of Everything."

Institute for Astronomy, 2/25/2011, Maui, Hawaii. Public talk: "A Geometric Theory of Everything."

Steve Goldman Lectures in Mathematical Physics, 4/14/2011, UCF, Florida. Invited talk: "A Quest for Unification."

IEEE Aerospace Conference, 3/6/2011, Big Sky, Montana. Keynote: "A Quest for Unification."

Singularity University, 8/4/2010, Mountain View, California. Invited talk: "The Beauty of Particle Physics."

Structure and representations of exceptional groups, 7/4/2010, Banff International Research Station, Canada. Series of invited talks: "Unification."

Joint Mathematics Meeting, 1/15/2010, San Francisco, California. Invited talk: "E8 Theory."

Representation Theory and Mathematical Physics, 10/24/2009, Yale, Connecticut. Invited talk: "E8 Theory."

St. Anthony Hall, 10/23/2009, Yale, Connecticut. Popular talk: "Elementary particles, geometry, unification, kitesurfing -- an unusual life in physics."

FQXi 2nd International Conference, 7/7/2009, Ponta Delgada, Azores. Invited talk: "The geometric structure of the standard model and gravity."

CSUF, 4/24/2009, Fresno, California. Colloquium talk: "A Quest for Unification."

Science in the 21st Century, 9/8/2008, Perimeter Institute, Canada. Group talk: "Open Source Science."

TED, 3/28/2008, Monterey, California. Popular talk: "The Beauty of Particle Physics."

Particle and Joint Theory Seminar, 3/7/2008, UC Davis. Invited talk: "An Exceptionally Simple Theory of Everything."

International Loop Quantum Gravity Seminar, 11/13/2007, virtual. Invited talk: "A Connection With Everything."

Quantum Gravity Seminar, 10/4/2007, Perimeter Institute, Canada. Invited talk: "An Exceptionally Simple Theory of Everything."

FQXi 2007 Inaugural Conference, 5/25/2007, Reykjavik, Iceland. Contributed talk: "The Universe as a Pretty Shape."

International Conference on Quantum Gravity, 6/26/2007, Morelia, Mexico. Contributed talk: "Deferential Geometry."

International Conference on Clifford Algebras and their Applications in Mathematical Physics, 6/29/1999, Ixtapa-Zihuatenejo, Mexico. Invited talk: "Geometric Origin of the Dirac-Hestenes Spinor Field in General Relativity."

SOME OTHER INTERESTS

Surfing, Snowboarding, Rock Climbing, Hang Gliding, Kitesurfing, and Go.