Andrew W. Forrester — Curriculum Vitae

Contact:

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Objectives: After obtaining my Ph.D. in physics, I plan to work on entrepreneurial business projects. I will also continue as a physics researcher and educator in some capacities.

Education:

University of California, Los Angeles (UCLA) ..... 2005 – present
Ph.D., Physics (expected 2012 September)
M.S., Physics (2007 June)
⋆ Fellowship: Graduate Assistance in Areas of National Need (GAANN)

California State University, Long Beach (CSULB) ..... 2000 – 05
B.S., Physics and Mathematics (2005 May)
⋆ President's Scholarship: Full 4-year academic scholarship

Experience:

Teaching ..... 2005 – present
I have had extensive experience as a tutor and teaching assistant. At CSULB I was employed by the Learning Assistance Center and tutored several students one-on-one on topics in physics. Within the UCLA Physics and Astronomy Department, I have taught a wide range of undergraduate courses in both the discussion and laboratory format, including introductory astronomy, conceptual physics, physics for life science majors, and physics for scientists and engineers. I have also taught a modern physics lab and an upper division acoustics lab. Together, these courses have included all the fundamental physics topics, including even experiments dealing with electronics, radioactivity, superfluidity, superconductivity, sonoluminescence, and soliton waves. I have also had experience tutoring students and friends one-on-one, during office hours and my own free time.

Graduate research ..... 2005 – present
Currently at UCLA I am finishing work with Dr. Gary Williams on a vortex-loop theory of the superfluid phase transition. I have also done research on gravito-electromagnetism and quantum field theory. My extensive notes are available on my website, along with the other papers mentioned here.

Financial work ..... Winter 2012
I worked at Euro Pacific Capital under the Los Angeles branch Vice President Mr. John Downs as an analytic and administrative intern. I started my work by writing a program to automate some of the financial calculations they were doing partly by hand. From there I moved into some financial and conceptual analysis and helped with electronic communications and some other administrative tasks. I left after a few months since they no longer had time to devote to the more interesting and complicated tasks (and wouldn't regain that time in the near future) and also so that I could refocus on finishing my doctoral work.

Entrepreneur net-work ..... 2010 – 2012
I have worked on several occasions for my friend and entrepreneurial exemplar Mr. Tom Garrett of Garrett Associates in his grass-roots automobile marketing campaign and in his new physical security company.

Undergraduate senior thesis ..... 2003 – 05
As a culmination of my participation in the University Honors Program at CSULB, I did research in quantum mechanics with my advisor, Dr. Chi-Yu Hu, and wrote a paper titled "Spectroscopy of Antihydrogen in a Laser Field via the Time Dependent Schrödinger Equation".

CERN Summer Student Program ..... **Summer 2004**
For this Research Experience for Undergraduates (REU) program, Northeastern University and the National Science Foundation (NSF) funded my travel to and from the European Organization for Nuclear Research named CERN. I attended a lecture series with 160 other students and worked on my individual research project under the supervision of Drs. Marco Calvi and Andrzej Siemko. I wrote a paper on my research titled "Simulating Quench Signals in the LHC Superconducting Dipoles". I also gave a lecture on my research, and it can be viewed from my website.

Los Alamos Summer School (LASS) in Physics ..... **Summer 2003**
LASS is another REU, funded and run by the NSF, the Los Alamos National Laboratory, and the University of New Mexico, at Los Alamos. I attended a lecture series with 16 other students and worked on my individual research project under the supervision of my mentor, Dr. Yogesh Joglekar. I wrote a paper on my research titled "Conductivities in Bilayer Quantum Hall Systems".

Atomic force microscopy ..... **2002 – 03**
I worked for Dr. Chuhee Kwon at CSULB, learned how to use an Atomic Force Microscope (AFM), and wrote manuals for Dr. Kwon's classes on how to use the AFM and prepare samples.

Naval Air Warfare Center, China Lake, CA ..... **Summer 2001**
As a Physical Science Technician working under Mr. Colin "Cap" Hugho, I performed an in-depth literature search in support of a development project, among other tasks.

California Algebra Standards **2000**
I was employed by Mr. Gary Maxwell, a teacher and school district official of Ridgecrest, to write and illustrate the California Algebra Standards for the state-funded Math Matters program. My work was distributed throughout the state to teach three key algebra standards (6, 7, and 8).

Products: **Research papers**

* Ph.D. Dissertation
  "Superfluid Theory: Vortex Theory of the Phase Transition, Pressure Dependencies in Equilibrated Three-Dimensional Bulk, and Vortex Pair Density in Quenched Two-Dimensional Film".
* Other graduate research
  "Free Quantum Field Theory of Scalar Particles" by C. Clark and A. Forrester.
  "Gravito-Electromagnetism (GEM): Weak (Linearizable) Slowly Changing Gravitation".
* Undergraduate senior thesis
  "Spectroscopy of Antihydrogen in a Laser Field via the Time Dependent Schrödinger Equation".
* CSULB research group paper
  "$e^+ + H$ direct annihilation above the positronium formation threshold" by C-.Y. Hu, D. Caballero, A. Forrester, and Z. Papp (Submitted to arxiv.org on 12 October 2004)
* CERN research
  "Simulating Quench Signals in the LHC Superconducting Dipoles".
* Los Alamos research
  "Conductivities in Bilayer Quantum Hall Systems". This was published with the other students' papers in the LASS Research Reports, Volume 6.

Resources

* Website articles, etc.
  My extensive notes, articles, and other resources are available on my website, along with the other papers mentioned here.
* Manuals
  I wrote manuals on how to use an Atomic Force Microscope (AFM) and how to prepare associated samples.

Presentations

* Research talk: "Simulating Quench Signals in the LHC Superconducting Dipole Magnets". I gave a presentation of my project in the CERN Summer Student Lecture Programme 2004. Links to a video of the presentation and the slide show file are located on my website.
* Planetarium Shows: I have given several free public planetarium shows in the UCLA Planetarium, this being an opportunity afforded to me when I was teaching astronomy courses.

Honors:

* 2011: Awarded scholarship to attend the 2011 Mises University (on economics and related fields) at the Ludwig von Mises Institute in Auburn, Alabama
* 2009: Awarded funds to travel to India for research as part of the India–U.S. Physics Student Visitation Program by the Indo–U.S. Science and Technology Forum and American Physical Society
* 2005–2006: Awarded fellowship at UCLA from U.S. Department of Education's Graduate Assistance in Areas of National Need (GAANN) Program
* 2005: Graduated from CSULB *magna cum laude*
* 2005: Graduated from the CSULB University Honors Program for "high attainments in liberal scholarship"
* 2005: Received Dr. Khalil Salem Award for academic leadership achievement and potential interest in teaching – given by the CSULB College of Natural Sciences and Mathematics
* 2005: Received Robert D. Rhodes Award for academic achievement – "Outstanding Baccalaureate Graduate in the Department of Physics and Astronomy" – given by the CSULB College of Natural Sciences and Mathematics
* 2005: Awarded for service as president of the Society of Physics Students of CSULB (2002–2004)
* 2003: Became member of Phi Kappa Phi Honor Society
* 2002: Undergraduate Award in Analytical Chemistry from the American Chemical Society Division of Analytical Chemistry and the journal Analytical Chemistry
* 2002: Received Freshman Chemistry Award at CSULB
* 2000–2004: Awarded President's Scholarship – Full (tuition, room/board, etc.) 4-year academic scholarship at CSULB
* 2000: Awarded as Student of the Year in the subject of Physical Science at Cerro Coso Community College
* 2000: Became National Merit Finalist and California Scholarship Federation lifetime member
* 2000: Received Bank of America Achievement Award in the field of Applied Arts (for work in video/film)

References: **Contact information available upon request**

* Dr. Gary Williams: graduate dissertation advisor, Professor at UCLA
* Mr. Tom Garrett: previous employer, Account Executive at Garrett Associates (Mickey Garrett and Associates) and Executive Director of the Be the Change Campaign division
* Mr. John Downs: previous employer, Vice President at Euro Pacific Capital, Los Angeles Branch