Brent Morgan

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Education

Stanford University — 2009 – 2011
Master of Science, Computational & Mathematical Engineering

The University of Arizona — 2005 – 2009
Bachelor of Science, Engineering Physics
Bachelor of Science, Mathematics
Cum Laude

Research & Work Experience

Teaching Assistant, Stanford University — 2009 – present
Taught lectures and review sessions, held office hours, and graded assignments and exams for the following:

- CME 100, Vector Calculus for Engineers (Autumn 2009, Autumn 2010)
- CME 106, Probability & Statistics (Winter 2010, Winter 2011)
- CME 104, Partial Differential Equations & Linear Algebra (Spring 2010, Spring 2011)

Independent Physics Study, The University of Arizona — 2008 – 2009
Derived relativistic Schrödinger equations (Dirac, Klein-Gordon), and interpreted radial solutions for the hydrogen atom. Worked with a physics group on relativistic quantum mechanics of micro-black holes, and sought for the rate of particle production from the Dirac equation in a Schwarzschild background. Research culminated in a paper and presentation.

Ronald E. McNair Achievement Program, The University of Arizona — Summer 2008
Collaborated with Dr. Michael Brown's Nuclear Magnetic Resonance (NMR) laboratory. Used MATLAB to analyze data and studied theoretical principles of NMR in group meetings: quantum mechanical formulation of spin Hamiltonian, treatment of relaxation processes, coupling of spin tensors. Work culminated in a paper and presentation. Funded by the University of Arizona Ronald E. McNair Achievement program.

National Science Foundation (NSF) Research Experience for Undergraduates — Summer 2007
Worked one-on-one with Dr. Vaughan Voller at St. Anthony Falls Laboratory, University of Minnesota. Created computer cellular automata simulations of agglomeration and coarsening models using MATLAB. Work culminated in paper and presentation. Funded by the NSF.

Study Abroad Physics Program, Clemson University in Trieste, Italy — Summer 2007
Conducted research at Elettra, a Synchrotron Light Laboratory in Trieste, Italy. Studied theoretical and experimental surface physics. Exposed to surface crystallography and diffraction, electron and tunneling microscopy, atomic and molecular beam scattering.

NASA Space Grant Consortium, The University of Arizona — 2006 – 2007
Worked one-on-one with Dr. Cho Lik Chan exploring linear instability in fluids and principles of magnetofluid dynamics. Used MATLAB, Fieldview, and Excel to analyze data of computer simulations. Work culminated in presentation. Funded by NASA Space Grant Consortium.

Leadership & Professional Affiliations

Stanford University Rubik's Cube Club	2009 – present
Physics Mentor in The University of Arizona Physics Department	2007 – 2009
The University of Arizona Rubik's Cube Organization, president and founder	2005 – 2008

Honors & Awards

Ronald E. McNair Scholar – award for being first generation college graduate	2008 – 2009
George Gregson Science Scholarship (UA College of Science)	2007 – 2009
First Level Honors (UA Honors College)	2007
Wildcat Family Spirit Award (UA Physics Department)	2007

Skills

MATLAB, C++, MS Office applications, LATEX, HTML, IGOR Pro, Linux Operating System

Non-Academic Achievements

Rubik's Cube World Championship finalist (2005), Rubik's Cube 24-hour marathon world record holder (2006), 2nd place in Rubik's Cube Italian Open (2007), semi-finalist in Rubik's Cube World Championship in Budapest, Hungary (2007)