

# Caleb Cannon

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## Statement of Intent

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I am a recent graduate of the University of Nevada, Reno with a Masters of Science in Physics and seek gainful employment in a scientific/technical environment. I would love to work for a company that encourages creativity and growth in its employees.

## Education

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- **University of Nevada, Reno**  
M.S., Physics, 2006
- **University of Nevada, Reno**  
B.S., Physics, 2003

## Employment History

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### Graduate Research Assistant

*Department of Physics, University of Nevada, Reno*

*2002-2006*

My graduate research work was done in atomic theory as a member of the Derevianko Group (<http://www.physics.unr.edu/~tap/>). I worked on a variety of atomic theory research problems such as quantum computing, searches for permanent EDMs, and particularly many body perturbation theory (MBPT). For my thesis I performed numerical evaluations of formulas derived from the fourth order of MBPT. These formulas involved summations over electron orbitals which were often 9 levels deep. Due to the computational intensity of the problem we elected to use a parallel code designed with Fortran and OpenMP. I wrote a parser with Perl to convert the equations from Mathematica to Fortran code. The resulting code was about 10,000 lines long and even with the optimizations it took our server (a 64 bit AMD Opteron with 4 CPUs) over a month to compute all of the terms. My work with the Derevianko group also resulted in two publications (see below).

### Graduate Teaching Assistant

*Department of Physics, University of Nevada, Reno*

*2003-2006*

I was a graduate teaching assistant for three years while I attained my M.Sc. at the University of Nevada. I taught introductory laboratory classes with an average of 40 students per semester. I was responsible for composing and presenting lectures on math and physics, grading completed student coursework and holding weekly office hours for discussion with students. I found teaching at the college level to be highly rewarding on many levels.

### Software Developer

*The Math Center, University of Nevada, Reno*

*2002*

I was recruited to design several online instructional utilities for use in the Math Center. The utilities include an examination system whereby authorized exam proctors can administer

mathematics placement tests for incoming university students. This system will generate unique tests for every student and grade tests automatically. I also designed a message board/discussion system suited particularly to discussion related to mathematics. It included a support for inline  $\LaTeX$  equations as well as a Java applet for viewing 2D graphs of functions.

### **Software Developer**

*Academic Skills Center, University of Nevada, Reno*

*1999-2002*

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Network administrator for the ASC (Academic Success Center) and ACS (Academic Career Services) networks, including general server maintenance, administration of SQL Server 7 and databases, and administration of the Microsoft Exchange server. I provided technical support for both departments. Additionally during my time at the center was part of a team that designed an online enrollment, scheduling and reporting system for the Academic Support Center. The system was designed with the ColdFusion HTML preprocessor and uses and uses a Microsoft SQL Server database. The system attempts to maximize the number of contact hours between students and tutors (a challenging scheduling problem as both students, tutors, and tutoring areas have variable availability). This site was an enormous success and is still operational (after 5 years of service). Visit the site at <http://studentdev.unr.edu/asc/students>

### **Software Developer**

*University of Nevada School of Medicine*

*1999*

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While working at the Nevada School of Medicine I provided general technical support for various departments. This included installation of hardware and software for Windows PC computers, video conference systems, and other miscellaneous hardware. I also designed the *SEARCH* web site (an online portal for medical students seeking residency and/or rotations in Nevada) using the ColdFusion HTML preprocessor.

## **Skills**

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I have more than eight years of experience programming for various platforms and operating systems. My current language of choice is Objective-C/Cocoa, however I am fluent in C/C++, Perl, and SQL. I feel comfortable with Fortran and Java/Javascript. I have dabbled with most other common languages such as Python and Delphi. Additionally, I am experienced with with several widely used APIs. Namely: MFC, DirectX, OpenGL, OpenMP, and MPI.

I am also an experienced website developer. I have created numerous advanced online applications using a variety of tools such as PHP, Java, Javascript, ASP (with VBScript and C#), and ColdFusion. Most of them utilized some form of database connectivity in order to generate dynamic content. These systems have included calendaring/scheduling systems, online discussion systems, payroll tracking, and games. Because many of them were developed within the higher education system I am also intimately familiar with often overlooked topics such as accessibility and "nicely degrading" websites. I am an experienced user of Adobe Photoshop as well as other graphics applications and have designed several website templates and logos.

As a graduate student in physics I also possess mathematical abilities that are far above average. As a physicist my area of focus has been quantum theory although I am keenly interested in mathematics and science in all forms, esp. cryptography, optimization, and next level physics (e.g. beyond the standard model).

## Posters, Presentations, and Publications

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- "Quantum computing with magnetically-interacting atoms", A. Derevianko and C. Cannon, *Phys. Rev. A* 70, 062319 (2004). (*quant-ph/0406117*). Also at *Virtual Journal of Quantum Information* 5 (2005).
- "Complete fourth-order relativistic many-body calculations for atoms", C. Cannon and A. Derevianko, rapid communication, *Phys. Rev. A* 69, 030502(R) (2004), (*physics/0306099*).
- "A Searchable User Interface for Computer Applications and Operating Systems", C. Cannon and S. Fugate, *Patent Pending* (2006).
- "Quantum Computing With Magnetically Interacting Atoms" C. Cannon, A. Derevianko, Poster, DAMOP (Tuscon, AZ) 2004.
- "The Web - Where Are We Going?" Caleb Cannon and David Bobzein, Presentation, Student Services Technology Summit 2003 (Reno, NV).
- "Next-Generation Many-Body Calculations for Alkali-Metal Atoms" C. Cannon, A. Derevianko, Poster, DAMOP (Boulder, CO) 2003.
- "Designing and Online Enrollment System for Tutoring - Lessons Learned" C. Cannon, S. Fugate, Presentation, ACTLA 2001 (Los Angeles, CA)

## Groups and Affiliations

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- Member, Institute of Electrical and Electronics Engineers (IEEE)
- Member, Society of Physics Students (SPS) (President, UNR chapter, 2002)
- Member, American Physical Society (APS)

## Portfolio

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For a small portfolio of work that I have done it is recommended that interested parties view my website. I have posted numerous samples of my work including applications and source code, various writings, links to websites that I have created, and others.

<http://equinox.unr.edu/~caleb/>