Seth Berl | Curriculum Vitae

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Objective

With my enrollment in the Atomic Physics Ph.D program at The University of Virginia and dual honors bachelor's degrees in Physics and Electrical Engineering and a minor in Mathematics from Old Dominion University, I employ my research, physics, engineering, mathematics, and computer science skills to innovate.

Education

University of Virginia **Charlottesville, VA**
Doctor of Philosophy (PhD) in Atomic Physics *August 2015–2020*

Old Dominion University **Norfolk, Virginia**
Physics and Electrical Engineering Dual Bachelor's Degrees, Mathematics Minor *2010–2014*
Honors College, Dean's List, Distinguished Student, Scholarship Recipient
Physics Department Research with Jefferson Laboratory
Electrical Engineering Department Research with NASA
Manager: ODU NCAA Men's and Women's Tennis Teams

Governor's School for Science and Technology **Hampton, Virginia**
Engineering Strand *2008–2010*
College Dual-Enrolled at Christopher Newport University and Thomas Nelson College
NASA Mentorship – Material Science Branch, Polymer Synthesis
Additional Research: *The Effect of Aging on the Ability to Hear High Tonal Frequencies*
First Place Robotics Competition – Assembled and Programmed Robot

Jamestown High School **Williamsburg, Virginia**
Advanced High School Diploma with Honors *2006-2010*
National Honor Society Member / High Honor Roll Every Semester
Advanced Placement Scholar Award
Lead Guitarist: Jazz Ensemble, Saxophonist: Concert and Marching Bands
Varsity Tennis Team: Singles and Doubles, Virginia State AA Finalist

Employment and Research Experience

Space Systems/Loral **Palo Alto, California**
Systems Engineer – Satellite Communications *2014–Present*
Radio Frequency System Design, Analysis, Simulations, & Testing
RF Gain/Loss Budgeting for Main and Redundant Device Pathways
Design Review and Technical Document Preparation

Smartec, LLC **Williamsburg, Virginia**
Owner, Technology Consulting Firm *2014–Present*
Provide clients with technologically advanced solutions that are understandable, maintainable, expandable, and enhance a project's profitability, productivity, efficiency, and margin.

Governor's School for Science and Technology **Hampton, Virginia**
Professor of Research Methodology and Ethics *2014–Present*
Creation of Curriculum and Lesson Plan

Christopher Newport University **Newport News, Virginia**
Assistant Tennis Coach, NCAA Men's Tennis *2015–Present*

Old Dominion University Electrical and Computer Engineering Department **Norfolk, Virginia**
Design of a Multicharged Ion Transport Line and Diagnostic System *2013–2014*
Design and Construction of Electrostatic Energy Analyzer, Einzel Lens, and Luminescent Detector for a Spark-Assisted Multicharged Ion Source
Construction of High Vacuum Systems and Ion Optics Simulations using SIMION
Dr. Hani Elsayed-Ali, Electrical Engineering Professor and Eminent Scholar

Microelectronics & Semiconductor Fabrication *2013–2014*
Semiconductor Device Design, Manufacturing, Fabrication, & Testing
Silicon Wafers with MOSFETs, MOS Capacitors, P-N Diodes, and Resistors
Dr. Sylvain Marsillac, Electrical Engineering Professor

Stony Brook University Physics Department – Metcalf Group **Stony Brook, New York**
Optical Forces from Adiabatic Rapid Passage and Bichromatic Light *Summer 2013*
Laser Alignment, Vacuum Systems, Optical Fiber Coupling/Launching, Polishing, and Fusion
RF Electronics – Electro-Optic Modulation (Amplitude and Phase) for Frequency Swept Light Pulses
Designed and Programmed Simulation of Atomic Velocity Distribution under the Bichromatic Force
Programmed and Implemented Various Data Analysis Techniques including Fourier Analysis
Dr. Harold Metcalf, Distinguished Physics Teaching Professor

Old Dominion University Physics Department **Norfolk, Virginia**
Second Order Correlation Function for Quasi One-Dimensional Anderson Localization *2012–2014*
Designed and Constructed Experimental Optical Setup
Designed, Programmed, and Implemented Data Acquisition System
Presentation at Frontiers in Optics Conference – Division of Laser Science, Rochester, New York
Dr. Mark Havey, Physics Professor, Eminent Scholar and University Professor

Nuclear Magnetic Resonance Software *2012–2013*
Programming and Design of RF Data Acquisition and Analysis Software
Old Dominion University / Jefferson Laboratory Research
Dr. Stephen Bueltmann, Physics Professor

Undergraduate Teaching Fellow *2012–2014*
Tutoring and Grading of Physics Tests, Projects, and Quizzes
Dr. Charles Sukenik, Physics Chairperson

Cosmic Ray Tracking and Calibration of Jefferson Lab CLAS12 Region II Drift Chamber *2010–2012*
Senior Thesis for Physics Bachelors of Science Degree, Completed Sophomore Year
Design and Construction of Computer Hardware and Software Systems
Programming, Design, and Implementation of High Energy Particle Tracking and Data Acquisition
Old Dominion University / Jefferson Laboratory Research
Assistant to Dr. Robert Bennett, Physics Postdoctoral Researcher
Dr. Gail Dodge, National Science Foundation and Prior Physics Chairperson

Old Dominion University Electrical and Computer Engineering Department **Norfolk, Virginia**
National Lightning Detection Network *2011*
Computer Programs Written for the Retrieval, Processing, and Analysis of Data
Lightning Data Methodology and Procedural Reports
Dr. George Szatkowski, NASA Langley Research Center
Dr. Linda Vahala, Associate Dean, Frank Batten College of Engineering
Director, Commonwealth Graduate Engineering Program

Three Dimensional Model Printer Construction for Use with Conducting Materials *2011*
Dr. Wes Lawrence, Old Dominion University

National Aeronautics and Space Administration (NASA) **Hampton, Virginia**
Langley Aerospace Research Student Scholars Program (LARSS) *2010*
Infrasonic Measurement System Development
Installation of an Array of Sensors, Collection of Data, and Data Analysis
Dr. Qamar Shams, Systems Engineering Directorate

NASA Langley Research, Advanced Materials Processing Branch *2008-2010*
Development of Soluble Imide Polymer Materials, 3D Computer Design,
Thermogravimetric Analysis, Differential Scanning Calorimetry,
Gas Chromatography, and Mass Spectrometry
Instructed Graduate Students in the use of Laboratory Equipment while a Junior in High School
Website Creation and Programming for Laboratory Test Requests, Defining
the New Standard of NASA Langley's Paperless Test Requisition
Dr. Robert Bryant, Advanced Materials and Processing Branch Head

Additional Employment Experience

Informational Technology Coordinator and Surveillance System Installation *2005–Present*
Guitar Performer, Guitar and Tennis Instructor
Endorser, Demonstrator, and Assembler for Warren Guitars, Co-Created and Prototyped the Warren Guitar Logo, Shirt Design, Guitar Case
Computers by Seth - Design and Assembly of Custom Computers for Business, Multimedia, Gaming, Servers, and Personal Use
Website Development

United States Government Security Clearance Eligible

Computer Skills

Operating Systems:
Microsoft Windows, All Linux Distributions and *NIX Systems, VxWorks, and Macintosh

Programming Languages:
C, C++, PERL, PYTHON, LABVIEW, Matlab, VHDL, HTML, PHP, SQL, and LaTeX

Software Experience:
Matlab, Mathematica, Adobe Professional Suite (Acrobat, Photoshop, Illustrator, Dreamweaver, Audition, Premiere Pro, Encore), Microsoft Office Suite (Word, Excel, Powerpoint, Publisher, Access), AutoCAD, Autodesk Inventor, Filemaker Databases, Reaper Audio Editor, Wireshark, Metasploit, Apache, MySQL, SSH, VirtualBox, Parallels, VMWare, ArcGIS Explorer, Microsoft Flight Simulators

Project Experience:
Audio and Video Multimedia Studio Recording and Editing
Data Acquisition and Advanced Computing Hardware Knowledge
Webmaster and E-Commerce Web Design

Professional Organizations

- American Physical Society
  - Division of Atomic, Molecular, and Optical Physics
  - Division of Laser Science
  - Division of Nuclear Physics
- Optical Society of America (OSA)
- Institute of Electrical and Electronics Engineers (IEEE)
- Society of Physics Students, Old Dominion University
- American Institute of Physics - Society of Physics Students
- Sigma Pi Sigma - Physics Honor Society

Conference Presentations

- 2012 Frontiers in Optics – Optical Society of America
  Second Order Correlation Function for Quasi One-Dimensional Anderson Localization

Patent

- Application with the United States Patent Office for a Pool Skimmer Device
  - Development of Idea, Design, Prototype, and Drawings

Other Notable Interests

Music:

- Lead and Rhythm Guitarist and Saxophonist for School, Corporate, and Fundraising Events

Tennis:

- Sport Club Executive Board Member, Old Dominion University
- President, Club Tennis at Old Dominion University Club Tennis
- NCAA Men's and Women's Tennis Team Manager, Old Dominion University