Curriculum Vitae

Name

Aspiring Electromagnetics & Plasmas Scientist

Email@gmail.com
Linkedin
Phone Number

Education & Qualifications

MS, Astronautics & Aeronautics, University of Washington (2021)
B.S, Physics, Santa Clara University (2019)
Minor in Electrical Engineering

Skills

Problem-Solving
Determination
Work Ethic
Perseverance
Communication
Teamwork

Interests

I have scoliosis, and because of this fact exercise, fitness, and eating well have all become large parts of my life. To facilitate these pursuits I also like to lift weights and play team sports like basketball and soccer in my free time. Besides being an active person I also like to read and view my education as a continuous process of learning and not a discrete action.

Beyond this I feel a burning desire to master the mathematics and physics involved in understanding how plasmas and fluids behave, and to find, among the many human endeavors that draw upon this knowledge, where I can make my contribution. I am drawn to propulsion and the problem of finding better and more efficient ways to make something go really fast. The opportunity to study the different applications of plasmas to this problem, and to understand how fusion fits into this context is what draws me to the A&A department at the University of Washington. Above all I wish to continuously hone and grow my knowledge and skills and use them to make the world a better place.

Research Experience

Exchange Coupling of Double Quantum Dots (2018)

Performed calculations of the exchange energy for a two-electron system that was subjected to a quartic potential and used to model a semiconductor double quantum dot. The purpose of studying the system was to evaluate its potential for application as a qubit in a hypothetical solid-state quantum computer. The work involved using the Hund-Milliken theory of molecular orbitals to build orthonormal wavefunctions out of the Fock-Darwin states that described the ground states of the individual electrons. The Mathematica computer software was utilized to aid in the calculation of the system Hamiltonian, which involved many Gaussian and Coulombic integrals. Ultimately, the direction of the research was to examine the potential of a 'handle term' for providing control on the height of the barrier, and thus tunneling, between the two electrons for the purpose of the creation of a universal quantum XOR gate to perform quantum computations.

Work Experience

Engineering Intern - Versalume, LLC (2017)

I worked in Silicon Valley for a startup that aimed to disrupt the commercial lighting space with a glass fiber that was flexible and could also be optically coupled to a laser. My primary duty was to develop code that controlled a multi-channel laser unit for technology demos. I also worked on developing a console to provide a user-friendly interface so that the unit could be applied to the restaurant and entertainment industries.

Achievements

Saint Louis 3 on 3 basketball tournament - Captain (2009)

Served as captain of 1st-place team in 3 on 3 division of regional basketball tournament. Communicated with tournament officials and teammates before and during the tournament on issues such as registration, strategy, game location & timing

St. Dominic Savio CHS Varsity Basketball (2009-2012)

Was a member of the varsity basketball team at SDS-CHS. Saw action as a shooting guard and small forward and learned the value of teamwork and the necessity of communication to the success of a team.

National Merit Finalist (2013)

Was honored for scoring in the 99th percentile on the PSAT and fulfilling additional requirements outlined by the National Merit Scholarship Corporation.

Technical Skills

Circuit Design & Analysis

Amplifier Design

CMOS Active Mode Operation
Current Steering
Current Mirroring
Voltage Biasing
Gain

Filter Design

Design of passive Low/Band/High-pass filters using capacitive and resistive elements
Design of active filters using NMOS technology

DC & AC Analysis

Ohm's Law
Method of Node-Voltages
Method of Loop-Currents
Phasor Analysis

Electromagnetics

Basic Concepts

Gauss' Law
Ampere's Law
Biot-Savart Law
Scalar & Vector Potential

Advanced Concepts

Maxwell's Equations
Method of Images
Dielectrics & Linear Media
Electric Displacement & Auxiliary Field
Poynting Vector

Classical Mechanics

Newton's Laws
Free-Body Diagrams
Linear & Angular Momentum
Principle of Least Action
Hamiltonian & Lagrangian Dynamics

Computational Analysis

Programming Languages

Matlab, Mathematica, C, C++

Software Packages

Synopsys, LTSpice

Numerical Methods

Euler Method
Gauss-Seidel Method
Galerkin Method

Mathematical Analysis

Partial Differential Equations

Separation of Variables
Poisson's Equation
Legendre Polynomials
Bessel Functions
Green's Functions

Fourier Analysis

Frequency Decomposition
Spectral Response

Linear Algebra

Real & Complex-valued Vector Spaces
Matrix Diagonalization
Eigenvalues & Eigenvectors
Determinants

Vector Calculus

Stokes' Theorem
Gradient Operator
Cartesian Coordinates
Curvilinear Coordinates