ALEC WILLS

alec.wills@stonybrook.edu
700 Health Sciences Dr. Bldg D #1055-C • Stony Brook, NY • (254) 434-3910

EDUCATION

Stony Brook University – Stony Brook, NY | *GPA: 3.70* August 2018 – Present
Ph.D. in Physics

Stony Brook University – Stony Brook, NY August 2017 – May 2018*
Master of Arts in Physics
**Transferred into Ph.D. program prior to receiving Master's degree*

The University of Texas at Austin – Austin, TX | *GPA: 3.84, Honors* August 2013 – May 2017
Bachelor of Science in Physics
Bachelor of Science in Astronomy
Bachelor of Arts in Mathematics

RESEARCH EXPERIENCE

Department of Physics and Astronomy – Stony Brook University January 2017 – Present
Graduate Research Assistant (advisor: Dr. Marivi Fernandez-Serra)

- Classically simulating solvated systems using force-field based molecular dynamics software packages such as GROMACS (Groningen Machine for Chemical Simulations), calculating and comparing various quantities of physical interest through configurational Voronoi analyses, umbrella sampling, and other trajectory-based values
- *Ab initio* electronic structure calculations of solvated systems using various levels of functional approximation in density functional theory with SIESTA (Spanish Initiative for Electronic Simulations with Thousands of Atoms) and CP2K, exploring sources of error in simulation parameters and discrepancies between choice of functional for simulations
- Utilization of the SeaWulf computing cluster at Stony Brook's Institute for Advanced Computational Sciences, allowing high performance parallel computing of the classical and quantum molecular dynamics simulations, familiarity with computationally intensive programming structures and efficient parallelization methods (OpenMP, MPI, GPU acceleration)

Department of Astronomy – University of Texas at Austin January 2014 – August 2015
Undergraduate Research Assistant (advisor: Dr. Mike Montgomery)

- Hands-on analysis for theoretical models of pulsation modes in variable white dwarf stars to study structure inhomogeneities and transition regions between layers, wherein collaborators assembled a physical analog to detect the location of a one-dimensional transition region via a vibrating string and Fourier decomposition of its harmonics
- Utilization of the 0.8 meter telescope at McDonald Observatory to gather observations of target variable stars and reduction of data using IRAF, Python Astropy packages, and Fourier analysis to find the pulsation modes and other asteroseismological characteristics of pulsating white dwarf stars
- Hands-on and remote use of the 0.6 meter Central Texas Astronomical Society's Meyer Observatory telescope

Freshman Research Initiative – University of Texas at Austin August 2013 – December 2013
Undergraduate Researcher (advisor: Dr. Mary Poteet)

- Coursework on the development of methods appropriate to novel research and instruction on statistical analysis relevant to types of data gathered
- Independent research and experimentation on effects of constant magnetic fields on growth rates of *E. coli* cultures in liquid medium using magnetometric readings, spectrophotometric observations, and hand-constructed apparatuses to ensure constancy in magnetic treatments during growth periods

PRESENTATIONS

- *Resolution Effects on NaCl Potentials of Mean Force,* **A. Wills** and M. Fernandez-Serra, at Stony Brook's IACS Research Day 2019. April 11, 2019.
- *DFT Characterization of Solvated NaCl Potentials of Mean Force and Energetics,* **A. Wills** and M. Fernandez-Serra, at APS March Meeting 2019. March 6, 2019. (http://meetings.aps.org/Meeting/MAR19/Session/K16.4)
- *Classical and Ab Initio Potentials of Mean Force for Solvated NaCl,* **A. Wills** and M. Fernandez-Serra, at Stony Brook University's Institute for Advanced Computational Science Joint Science Meeting with Tokyo Institute of Technology. May 22, 2018.

ACADEMIC HONORS and DISTINCTIONS

College Scholar Spring 2016
- GPA in top 20% of graduating class at time of presentation

Distinguished College Scholar Spring 2015
- GPA in top 4% of graduating class at time of presentation

University Honors Fall 2013 – Spring 2017
- Semesterly honor for those who maintain a GPA above a 3.50

Calculus Emerging Scholars Program Fall 2013 – Spring 2014
- Coursework in critical thinking, applying mathematical theory, abstract problem solving
- Intensive group collaboration

LEADERSHIP EXPERIENCE and ACTIVITIES

Delta Lambda Phi Fraternity – Beta Rho Chapter January 2016 – December 2016
Vice-President
- Organize recruitment efforts during peak interest times
- Plan all rush event for potential new members
- Reserve meeting rooms for weekly brotherhood meetings
- Assist in delegation of tasks and administrative duties

Roundabout Players Fall 2015 – Spring 2017
Lighting Production Manager
- Kathleen Brown's *Pride, Prejudice & Perms* (dir. Kathleen Brown)
- Edward Albee's *Seascape* (dir. Brennan Patrick)
- Direct the focusing of lights on production space
- Conceptualize lighting cues and color schemes to fit director's view for play
- Execute timed cues during performances

Delta Lambda Phi Fraternity – Beta Rho Chapter Fall 2013 – Spring 2017
Brother
- Community volunteer work with fraternity brothers
- Fundraisers for AIDS research, The Trevor Project, and Austin Smiles
- Campus outreach with other LGBT organizations

Society of Physics Students Fall 2013 – Spring 2017
Member
- Attend talks and panels led by professors, graduate students, and undergraduate students

WORK EXPERIENCE

Texas Union Tower Tours – Austin, TX October 2014 – August 2017
Tower Tours Assistant
- Assistant to Tower Tours coordinator
- Make large group reservations
- Help manage tour database and logistics
- Supervise tour guides when coordinator is not present
- Handle initial collection of cash to be used in transactions
- Update informational wiki system and migration to new server

ADDITIONAL INFORMATION

Computer Skills: coding in Python, Fortran, C++; Mathematica, LaTeX, certified Microsoft Office Specialist (2013)
Languages: English
Personal Interests: Reading, camping, cooking, technology
Work Eligibility: Eligible to work in the U.S. with no restrictions