

BRIAN LEONEL FLORES

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EDUCATION

California State University, Long Beach

June 2014

B.S. in Physics

B.S. in Applied Mathematics - Physics

University of Pittsburgh

December 2016

M.S. in Physics

RELEVANT GRADUATE COURSEWORK

ASTRON 3705 - Astronomical Techniques

ASTRON 3550 - Stellar Structure

PHYS 3725 - General Relativity 1

PHYS 3726 - General Relativity 2

RESEARCH EXPERIENCE

Department of Physics and Astronomy, CSULB

July 2011 - June 2014

Research Assistant

Long Beach, CA

- Fabricated thin films of Fe-Ni on nanospheres in Professor Jiyeong Gu lab
- Assisted characterizing hysteresis loops of various thicknesses of thin films using Magneto-Optical Kerr Effect (MOKE) system
- Improved measurement efficiency of MOKE systems using lenses
- Simulated magnetic domain annihilation/nucleation in thin films under MOKE system conditions using Objective Oriented MicroMagnetic Framework (OOMMF)

Argonne National Laboratory, Department of Material Science

June 2012 - August 2012

REU Intern

Lemont, IL

- Simulated magnetic vortex ground states of nanodiscs on OOMMF in Dr. Valentin Novosad lab
- Aided in developing an efficient technique for spin coating substrates using various concentration of Hypromellose (HPMC) solution.
- Fabricated nanodiscs of Au/Fe-Ni/Au using (HPMC) layer and stencil mask for purposes in medical physics research.

Department of Physics and Astronomy, University of Pittsburgh

May 2015 - Present

Research Assistant

Pittsburgh, PA

- Modeling stellar atmospheres and synthesizing spectra of hot, massive stars using CMFGEN with Dr. John Hillier
- Developed a new method for treating inhomogeneous (“clumped”) stellar winds, testing it with observed spectra of AzV83 - a blue supergiant star - and compared it with previous methods
- Writing code to calculate convective flux in yellow supergiant stars’ sub-photosphere for two different methods - Mixing-Length Theory formalism and Navier-Stokes Equation - to study its effects on driving stellar winds and to derive accurate abundances for stellar evolution studies of hot, massive stars

PRESENTATIONS

“Synthetic Spectra of S Dor”

June 2017

Eta Carinae, LBVs, and Supernova Impostors Workshop, University of Pittsburgh, Pittsburgh, PA

TECHNICAL STRENGTHS

Computer Languages	FORTRAN 95, Mathematica 8, LaTeX
Operating System	Unix, Linux
Computer Code	CMFGEN, ATLAS9
Tools	TeXstudio, Vim

TEACHING EXPERIENCE

Department of Physics and Astronomy, University of Pittsburgh August 2014 - present
Teaching Assistant *Pittsburgh, PA*

- TA for several introductory-level physics and astronomy courses and labs, including an upper division physics course - *Wave Motion and Optics* (Phys. 1361) - for physics undergraduates.
- Before weekly recitations, I designed example problems and quizzes to aid students' understanding material, and prepared discussion points on the topics presented during lectures
- For each lab session, I prepared and guided students through their lab exercises
- I provided feedback and aided in the design of midterm and final exams

Tsung-Dao Lee Institute, Shanghai Jiao Tong University May 15, 2019 - May 24, 2019
Teaching Assistant *Shanghai, China*

- Aided Dr. John Hillier in his "boot camp" course on understanding, using, and writing radiative transfer codes for applications in multi-messenger astrophysics
- I aided students to read and write code in FORTRAN90 for modeling simple stellar atmospheres, and tcsh-scripting for handling jobs.
- I trained students to run CMFGEN and CMF_FLUX, and taught them on how to understand and use the model data.

LEADERSHIP & COMMUNITY INVOLVEMENT

Astrosnacks & Astrohacks

Host a weekly hour-session where graduate students can present their research, a piece of their code, or a general computer programming topic (e.g. how to use Git and GitHub, increase coding productivity using an IDE, etc.) in the comfort of their peers and receive feedback.