Pierre Thibodeaux

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Research Interests

I am broadly interested in galactic formation and evolution, especially in the early universe, using a combination of simulations and observation.

Education

Bachelor of Science in Physics (in progress) — expected Jun. 2022
College of Creative Studies
University of California, Santa Barbara,
Average unweighted GPA: 3.97/4.0
Major GPA: 3.96
Major (excluding Astro) 3.95

Awards and Honors

REU in Physics at UTRGV ($4750)	2021
Chair Appreciation Award *for UDIP*	2021
Axline Fellowship ($2000)	2020
National AP Scholar	2018
Dillon Henry Foundation Scholarship ($8000)	2018
Regents Scholarship ($18000)	2018
National Merit Scholar Finalist	2018

Research Experiences

Adaptive Binning of KCWI Data Cubes:
Constructing Emission-Line Images and Velocity Field Maps — August 2021 - Present
Senior Thesis
University of California Santa Barbara
Mentored by Dr. Crystal Martin

- Extending previous work with Adaptive Binning algorithms and KCWI data cubes to look at specific structures in extreme emission line dwarf galaxy nebulae
- Constructing and binning narrowband images from the spatially-resolved spectroscopic cubes
- Fitting spectra with Python, astropy to calculate line-of-sight velocity of gas in nebulae to investigate gaseous halo kinematics
- Identifying galactic morphology features using SAOImagerDS9

Particle Swarm Optimization with Seeding
For Gravitational Wave Signal fitting — June 2021 - August 2021
Summer Research Experience for Undergraduates
University of Texas, Rio Grande Valley (Brownsville)
Mentored by Dr. Soumya Mohanty

- Implemented a seeding function in a Matlab gravitational wave fitting code to determine if it would improve processing time or accuracy.
- Generated and tested various fitness functions to accommodate simultaneous fitting of signal waves

Imaging Galactic Nuclei: Adaptive Binning with WVT — June 2020 - June 2021
Axline Fellowship
University of California, Santa Barbara
Mentored by Dr. Crystal Martin

- Implemented an Adaptive Binning code in Python based off of the WVT algorithm from Diehl and Statler 2006 to probe the low-luminosity, poor SNR regions of KCWI images of dwarf galaxy nebulae
- Modified original prescription to better handle negative data (from background subtraction)
- Simulated false galactic profiles to test and optimize the performance of the Adaptive Binning code
- Looked for "edges" and leaky ionization from galactic nebulae and investigated the effect of the Adaptive Binning in elucidating these regions

GreenPol November 2018 - November 2019
University of California, Santa Barbara
Mentored by Dr. Peter Meinhold

- Examined and reworked Python code for processing of data from the GreenPol telescope, which measures sky temperature data to investigate the CMB
- Set up and operated day and night-time telescope runs for data collection

Talks

"Particle Swarm Optimization with Seeding For Gravitational Wave Signal Fitting"
UCSB Undergrad Physics Research Symposium September 2021
University of California, Santa Barbara

"Imaging Galactic Nuclei: Adaptive Binning with WVT"
CCS Research and Creative Activities Conference November 2020
UCSB Undergrad Physics Research Symposium September 2020
University of California, Santa Barbara

Posters

"Imaging Galactic Nuclei: Adaptive Binning with WVT" November 2020
CCS Research and Creative Activities Conference
University of California, Santa Barbara

Work Experience

Student Communications Coordinator May 2021 - Present
Physics Department
University of California, Santa Barbara

- Coordinating internal communications with team members, students, faculty, and collaborators
- Entering and collating departmental contact information using Google Sheets, Excel
- Writing student/faculty profiles and generating content for the UCSB Physics website and social medias
- Designing graphics in Adobe Spark, Photoshop, and Powerpoint, for publicizing events and initiatives within the department

Retail Sales Associate June 2019 - September 2019
Staples
Los Angeles, California

- Assisting customers to find office supplies and offering advice to guide customer purchases
- Unpacking merchandise shipments and arranging them on the shelves in a pleasing way
- Operating the cash register, helping customers check out and process returns

Relevant Coursework

Physics: Classical Mechanics, Electromagnetism, Quantum Mechanics, Statistical Mechanics and Thermal Physics, Optics, Stellar Structure and Evolution, Cosmology, Galactic Dynamics

Mathematics: Calculus, Differential Equations, Linear Algebra, Intro to Proofs, Statistics, Stochastic Processes

Skills

Programming Languages:

Python (astropy, matplotlib, numpy, scipy), Matlab, Java, Javascript, Mathematica, C#

Operating Systems:

Mac OS, Raspbian/Raspberry Pi OS

Software:

LaTeX, IRAF/ds9, Git

Other:

- Conversational in French
- Proficient with Microsoft Office/Google Workspace

Outreach Experience

President, Astronomy Society at UCSB — June 2020 - Present
Student Organization at University of California Santa Barbara

- Coordinating and training the officers in planning events for our membership, including budgeting and venue reservation
- Authoring communications to collaborators
- Setting up and operating telescopes for night-time astronomical viewing, and guiding participants through the viewing process

Vice President, Undergraduate Diversity and Inclusion in Physics — June 2021 - Present
Student Organization at University of California Santa Barbara

- Assisting the president in their duties, delegating tasks to members and co-presiding over meetings
- Making sure that members are feeling comfortable in our meetings, that their voices are being heard, and that our meetings are efficient and equitable
- Communicating to other organizations, individuals, and entities to collaborate on events, workshops, and seminars
- Spearheaded effort to supply public-use textbooks for physics students who lack the financial means to purchase them

Treasurer, Undergraduate Diversity and Inclusion in Physics — June 2019 - June 2021
Student Organization at University of California Santa Barbara

- Planned the budget, taking into account our merchandise revenues and expenses, and the costs for various events
- Presented and defended funding proposals to various university entities
- Coordinated with other officers and entities to execute events, workshops, and seminars
- Authored letters to the chair and faculty of the department about accessibility and accommodations during remote instruction

Secretary/Liaison, out in STEM @ UCSB — June 2019 - Present
Student Organization at University of California Santa Barbara

- Planning and executing social and professional events for our members
- Distributing publicity information to various departments for dissemination

Extracurricular Activities

Game Development

I like to experiment in game design using Unity, RenPy, Javascript, and PyGame. I am particularly interested in narrative in interactive media.

Writing

Most of my writing is theatre or poetry, but I also write prose sometimes. My work is concerned with inhabiting identities, particularly the transition between and multiplicity of different social and personal roles. I am also interested in the expressions of minute behaviors or emotions.

- Published in the Spectrum 2021 Summer Edition, both independent submissions and the Special Feature: Exquisite Corpse
- Honorable Mention for the 2021 CCS Most Excellent Writing Contest (Narrative Prose)