

Jonathan Rodriguez
Astronomy & Astrophysics
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EDUCATION

- Currently enrolled in Fisk/Vanderbilt Masters to PhD Bridge Program
- Bachelor of Science degree in Astronomy & Astrophysics, Physics Minor / Villanova University / August 2017 – May 2021
3.37 GPA / Dean's List Spring 2018, Spring 2020, & Spring 2021 / **Astronomy & Physics:** Sun and Stars, Solar System Astronomy, Understanding Our Universe (Cosmology), Observational Lab I, Astrodynamics, Observational Lab II, Astrobiology, Undergrad Research I, Galactic Astronomy, Undergrad Research II / **Physics:** Mechanics course and lab, Computational Physics Lab I, Computational Physics Lab II, Electricity & Magnetism course and lab, Thermodynamics course and lab, Modern Physics course and lab, Mathematical Physics I, Mechanics I, Electricity & Magnetism I, The Principles of Scientific Modeling, Mathematical Physics II, Quantum Mechanics / **Math:** Calculus I, Calculus II, Calculus III, Differential Equations with Linear Algebra
- Advanced Regents Diploma / All Hallows High School / 2013 - 2017

ACTIVITIES / PROGRAMS

- Center for Access, Success and Achievement (CASA) program Alumni
- Member of the Edward Collymore Honors Society
- Mentor to a freshman Astrophysics student through the Astrophysics Mentorship program: 2020-2021
- Participated in the St. Thomas of Villanova Scholars (STOVS) program
- Member of Villanova Astronomical Society: 2017-2021
- Member of American Astronomical Society: 2019-2021
- Measure Up Acapella Group: 2018-2019
- VU Table Tennis: 2018
- Novacanes Soft Ball Team: 2018

VOLUNTEER PROJECT

- Finalist in the NASA RASC-AL 2021 for Mars Human Exploration
 - Led & participated in the Environmental Division for team VUDURU (Villanova University with Drexel University and Rutgers University), as well as helped the Human Factors Division.
 - Our mission was to establish innovative concepts that will allow the expansion of human space exploration for celestial objects
 - Wrote a technical paper and created a video presentation; Presented our concept and answered questions from judges at a live Q&A

RESEARCH OPPORTUNITIES

- Villanova University
 - Undergraduate Research I and II: 2019 - 2020
 - Produced papers on Cepheid variable stars and cataclysmic variable white dwarfs.
 - Asteroseismology of Red Giants in Eclipsing Binaries / June-August 2019
 - Presented results at Villanova Student Research Symposium on September 13, 2019
 - Presented further results during 235th Meeting of the American Astronomical Society on January 5th, 2020 in Hawaii
 - Astrophysics: 2021
 - Conducted research on the interior structure of pulsars (neutron stars), their equations of state, the spindown of pulsars, their source(s) of energy, and their evolution. Produced paper on the results.

WORK EXPERIENCE

- Villanova University
 - Public Observatory Telescope Operator & Technician: 2017 – 2019
 - Responsible for operating the telescope for the public during Astrophysics Public Observatory hours
 - Assisted students in viewing and identifying various celestial objects
 - Answered questions students and the general public may have in relation to the telescopes and various instruments
- The Osborne Apartments (NYC Landmark Residential Building)
Summer Relief: June 2016 to August 2016 and June 2017 to August 2017
 - Responsible for covering Doormen, Maintenance Porters, and Office Employees in varying shifts
 - Doorman Responsibilities
 - Displayed a warm, friendly, professional greeting to all residents and guests who entered the building
 - Ensured building safety and security by tracking all visitors entering the building through an internal computer database and effectively communicated with residents to announce guests
 - Assisted all tenants entering or leaving the building by properly opening building doors and providing assistance with packages, luggage, and various requests
 - Porter Responsibilities
 - Performed daily maintenance in accordance with cleaning policies created to maintain the integrity of landmark features
 - Cleaned and maintained the building's lobby, including brass fixtures, marble benches, windows in the doors and frames
 - Performed maintenance duties in all common areas inside and outside of the residential building that involved sweeping, dusting, mopping, window/glass cleaning, scrubbing, and replacing lightbulbs
 - Sorted and separated garbage and recycling according to NY safety recycling regulations
 - Managed morning newspaper delivery to apartments
 - Maintained outdoor potted plants as necessary daily or twice daily, depending on the weather
 - Building Services Office Responsibilities
 - Received, organized and utilized the appropriate computer systems to register incoming packages and deliveries
 - Answered telephone in friendly, professional manner and handled telephone messages accurately, completely, and promptly
 - Responsible for tracking all visitors and construction workers entering the building through an internal computer database

HOBBIES / INTERESTS / SKILLS

- Astronomy, Languages, Coding
 - Astronomy: Observing cellular objects using my telescope, researching unanswered questions, thinking of better ways to analyze/interpret data.
 - Languages: Self-learning the basics of foreign languages, such as Russian, Norwegian, Swedish, as well as studying their arts and cultures. I understand Latin Spanish very well.
 - Deductive Reasoning: Researching origin of various events, solving brainteasers, exploring unanswered questions in history/science.
 - Coding: Proficient in Python, Microsoft Excel, and LaTeX. Can use JMARS, AstroImageJ, and Villanova CLUSTY software well. Basic knowledge of C/C++