

GILBERTO GARCIA

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EDUCATION

Wesleyan University

B.A. Astronomy & B.A. Physics, GPA: 3.41/4.00

May 2020

Middletown, CT

RESEARCH EXPERIENCE

Research Associate

Loyola University Chicago Department of Physics

Oct. 2020 - Present

Chicago, IL

- Work with Dr. Brian Cannon on understanding the structure and dynamics of non-helical DNA and its role on genetic disorders through two main projects. The first studies the stability and dynamics of DNA in the hairpin structure through use of single-molecule Förster resonance energy transfer (FRET) microscopy. The second project investigates the effects of internal loops on the stability of the DNA's helical structure. I will present a poster of this work at the National Meeting of the Biophysical Society in February 2022.
- Train undergraduate students in the lab and oversee their research projects
- Assisted in the developing and writing lab modules for a new physics lab course on integrated physics for life science students

Research Assistant

Wesleyan University Department of Astronomy

May 2018 - May 2020

Middletown, CT

- Work with Dr. Edward C. Moran on constructing a catalog of long-term, variable X-ray sources to understand the nature of accretion rates for supermassive black holes at the center of galaxies.
- Created a pipeline to query data from the Chandra X-ray Observatory and apply matching algorithms to find a source's counterpart in other X-ray catalogs. The pipeline applies statistical methods to create light curves using data spanning 4 decades.
- Presented a poster of our work at *Wesleyan's Summer Research Symposium* (June 2018, June 2019), at the *National McNair Conference* at UCLA (July 2019), *Keck Northeast Astronomy (KNAC)* at Vassar (October 2019), and at the *American Astronomical Society's 235th Meeting* in Honolulu, HI (January 2020). Gave a talk at *KNAC* at Middlebury (October 2018).

TEACHING EXPERIENCE

Teacher Apprentice

Wesleyan University Department of Astronomy

Jan. 2020 - May 2020

Middletown, CT

- Enhanced pedagogical methods by serving as an additional resource for 40 students in Wesleyan's *Dark Side of the Universe* (ASTR111)
- Held and managed large weekly homework help session via Zoom and practiced assessment skill by creating homework rubrics and grading student homeworks

Teacher Apprentice

Wesleyan University Department of Astronomy

Sept. 2019 - Dec. 2019

Middletown, CT

- Served as teaching assistant for Wesleyan's 40 student *Exploring the Cosmos* (ASTR105) course
- Held homework help sessions and graded homework weekly, graded student midterms and finals, led bi-weekly class observing nights by operating Wesleyan's telescopes, and taught class when the professor was unavailable

LEADERSHIP

Coordinator

Cross Street Tutoring

Sept. 2016 - May 2020

Middletown, CT

- Connect low-income students (K-12) from various Middletown public schools with educational resources, including supplies and tutors, through a daily after school program. Plan events geared towards igniting the Middletown students' interest in STEM and higher education by bringing in speakers and creating science lesson plans.
- Recruit and train groups of Wesleyan tutors on pedagogical methods to more effectively assist Middletown students with classwork and homework while also creating a safe and comfortable work environment.

Co-Founder

Wesleyan Astronomy Club

Sept. 2018 - May 2020

Middletown, CT

- Created as a space to for Wesleyan students to get involved with the astronomy department at an enthusiast's level. Lead biweekly meetings on current and classic topics pertaining to astronomy geared towards people with minimal astronomy and physics knowledge while occasionally opening Wesleyan's telescopes to allow students to observe.

Public Outreach Volunteer

Wesleyan University Department of Astronomy

Jan. 2018 - May 2020

Middletown, CT

- Engage with the Wesleyan student body and Middletown community by hosting presentations and observing sessions as part of Kids' Night and Space Night, public outreach programs at Wesleyan's Van Vleck Observatory. Kids' Night involves a short demonstration followed by activities and observing for younger children while Space Night involves a presentation delivered at a high-school/college level followed by an observing session.

AWARDS, HONORS, AND AFFILIATIONS

<i>Fellow, Summer Research Program, Wesleyan University</i>	Summer 2018, Summer 2019
<i>Recipient, High Honors for Astronomy Thesis, Wesleyan University</i>	May 2020
<i>Fellow, Space Telescope Science Institute Summer Program</i> <i>*offered a position but canceled due to COVID-19*</i>	Summer 2020
<i>Fellow, McNair Post-Baccalaureate Program, Wesleyan University</i>	Jan. 2019-Present
<i>Fellow, QuestBridge National College Match Program</i>	Jan. 2016-Present
<i>Fellow, Chicago Scholars Foundation Program</i>	Jan. 2016-Present

TECHNICAL SKILLS

Operating Systems

Mac OS, Microsoft Windows

Languages

Python, C, HTML, CSS, SQL, \LaTeX

Software

IRAF, SAOImage DS9, Mathematica, Microsoft Excel, Google Drive