

Ian Williams

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Education

New York University (2022-2027)

- PhD, Physics advised by Jeremy Tinker

University of Washington (2019-2022)

- Physics, astronomy, mathematics coursework and research

Worcester Polytechnic Institute (2007-2011)

- B.S., Double Major, with High Distinction: Computer Science; Game Development

Research Experience

DESI Galaxy Group Catalog (under Prof. Tinker at NYU, Jun 2023 – present)

- Created a galaxy group catalog from the DESI (Dark Energy Spectroscopic Instrument) Bright Galaxy Survey DR1
- Developed a technique to mitigate fiber incompleteness for group finding
- Developing a method for including additional galaxy and halo properties into group finding

CGMBrush (under Prof. McQuinn at U Washington, Jul 2020 – Aug 2022)

- Co-authored a library for baryonic post-processing of N-Body simulations and used this to interpret how fast radio bursts can probe the circum-galactic medium
- Williams, I; Khan, A., McQuinn, M. “Baryonic post-processing of N-body simulations: Application to fast radio bursts.” MNRAS.

Disruption of Axion Minihalos (under Prof. McQuinn at U Washington, Apr 2020 – Mar 2021)

- Analytically evaluated disruption of axion minihalos, an undetected form of substructure in dark matter halos. Motivated by observational possibilities that could be used to gather evidence for axions as dark matter candidates.
- Xiao, H; Williams, I; McQuinn, M. “Simulations of Axion Minihalos” Physical Review D.

Proton Conductors (under Dr. al-Wahish at U Washington, Sep 2019 – Oct 2020)

- Conducted a quasi-elastic neutron scattering analysis of SrHPO_4 to study proton conductivity.
- “Quasi-Elastic Neutron Scattering Study of SrHPO_4 ” recording at the American Conference on Neutron Scattering.

Industry Experience

Microsoft (Seattle, WA, July 2011 – October 2018)

Senior Software Engineer, Azure DevOps

- Led the development of new features such as a query designer and new dashboard widgets

Software Engineer II-Senior, various incubation organizations

- Utilized Lean Startup techniques to rapidly test productivity application concepts from customer, technical, and business viability standpoints

Software Engineer I-II, OData Team

- Shipped a C# library for web services; owned deployment process; owned a URI Parser; played a critical role in defining the team’s culture of continuous engineering improvements

Charles River Analytics - internship (Cambridge, MA, Summer 2010)

ImaginEngine - internship (Framingham, MA, Summer 2009)

Publications

- Williams, I; et al. “Galaxy Groups from the DESI DR1 Bright Galaxy Survey.” In prep.
- Williams, I; Khan, A., McQuinn, M. “Baryonic post-processing of N-body simulations: Application to fast radio bursts.” MNRAS. <https://doi.org/10.1093/mnras/stad293>; arXiv:2207.05233
- Xiao, H; Williams, I; McQuinn, M. “Simulations of Axion Minihalos.” Physical Review D. <https://doi.org/10.1103/PhysRevD.104.023515>; arXiv:2101.04177
- “Robogeddon – A Casual Real Time Strategy Game.” *Worcester Polytechnic Institute Student Publication* (2011)
- “Benefits of Partial Road Closures: An Analysis of the Effects on Quality of Life from the Nørrebrogade Road Closures.” *Worcester Polytechnic Institute Student Publication* (2010)

Presentations

- “The Galaxy Halo Connection from DESI BGS.” *Flatiron CCA Invited Talk* (Apr 2026)
- “The Galaxy Halo Connection from DESI BGS.” *MOCKNYC Conference* (Jan 2026)
- “The Life and Death of Galaxies.” *Public talk at Book Club Bar in NYC* (Nov 2025)
- “BGS Group Catalog Updates” *DESI Meeting* (July 2025)
- “BGS Group Catalog.” *DESI Meeting* (Dec 2024)
- “On the Disruption of Axion Minihalos.” *Poster at the 237th Meeting of the American Astronomical Society* (Jan 2021)
- “Quasi-Elastic Neutron Scattering Study of SrHPO₄.” *Poster at the American Conference on Neutron Scattering* (July 2020)
- “Quasi-Elastic Neutron Scattering Investigation of Proton Diffusion in in SrHPO₄.” *Poster at UW Undergrad Research Symposium* (May 2020)
- “Living Customer Obsession.” *Microsoft Oneweek Internal Conference* (July 2015)
- “Expensly Business Pitch.” *Microsoft Garage* (2015)

Patents Filed

- Recall Service for Productivity Applications (*January 2017*)
- Report Generation Using Event Infrastructure (*April 2015*)

Teaching Experience

Guest Lecturer at NYU. Two lectures on compact objects and relativity for “Quarks to Cosmos” (*Spring 2026*)

Guest Lecturer at Hunter College. Two lectures on Cosmology for Astro 100 (*Fall 2025*)

Advisor: Advising an astronomy project with two high school students (*Fall 2025*)

TA at New York University: For General Physics I Lab (*Fall 2023*)

Mentor at University of Washington: Pre-major in Astronomy project mentor (*Fall 2021*)

Mentor at Microsoft: mentored newly hired software engineers at Microsoft (*2015-2018*)

Instructor at InternalDrive Tech Camps: instructor for game development & programming courses
(*Summer 2008*)

Service and Outreach

Cosmic Happy Hour – panelist. May 2026

Cosmic Happy Hour – gave a public lecture “The Life and Death of Galaxies.” Nov 2025

Astro Grad Congress – NYU representative. 2024-present

Ran Astro Journal Club – NYU. Fall 2024 – present

Conference for Undergraduate Women and Gender Minorities in Physics – NYU. Jan 2025.

Cosmic Happy Hour Volunteer. 2024 – present