

Courtney B. Watson

PhD Candidate · Astrophysics

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Education

2019-now	PhD Studies , Astrophysics Advisor: Dr. Elizabeth Blanton Thesis: "Galaxy Cluster Dynamics: Insights from Bent, Double-Lobed Radio Sources and Multi-wavelength Observations"	Boston University
May 2022	Master of Arts , Astrophysics	Boston University
2018-2019	Graduate Studies , Astrophysics Yale Post-Baccalaureate Research Education Program (PREP)	Yale University
May 2018	Bachelor of Science , Physics Minor in Astrophysics Undergraduate Thesis: "Identifying Galaxy Mergers in High Redshift Clusters Using the Hubble Space Telescope" Advisor: Dr. Kim-Vy Tran	Texas A&M University

Experience

Research

2020-now	Graduate Research Assistant Advisor: Dr. Elizabeth Blanton Employing space-based observations to study the thermodynamic properties of galaxy clusters and investigate the interplay between active galactic nuclei and their surrounding cluster environments	Boston University
Jul 2024-Now	Predoctoral Fellow Advisor: Dr. Scott Randall Using X-ray observations of ICM to study thermodynamics of one of the longest, continuous sloshing spirals ever observed.	Harvard-Smithsonian CfA, Chandra X-ray Center, HEA Division
Sum. 2020, 2024	Visiting Student Fellow Advisor: Dr. Scott Randall Using X-ray observations of the ICM of radio source host clusters to map its thermodynamic properties and morphology	Harvard-Smithsonian CfA, Chandra X-ray Center, HEA Division
2019-2020	Research Assistant Advisor: Prof. Sarbani Basu Asteroseismic analysis of solar-cycle related changes in the sun	Yale University, Department of Astronomy
2018-2019	Post-Baccalaureate Researcher Advisors: Prof. Pieter van Dokkum and Prof. Sarbani Basu Near-infrared spectroscopy of high redshift galaxy-galaxy mergers; Asteroseismic analysis of solar-cycle related changes in the sun	Yale University, Department of Astronomy
2015-2018	Research Assistant Advisor: Prof. Kim-Vy Tran Identification of galaxy-galaxy mergers in high redshift galaxy clusters.	Texas A&M University, Department of Physics and Astronomy
2016-2017	Undergraduate Researcher <i>Undergraduate Research Scholars</i> Combined Hubble Space Telescope photometry with 3D-HST observations to present a complete survey of potentially merging objects in two high redshift clusters.	Texas A&M University, Department of Physics and Astronomy

Teaching

Spring 2024	Teaching Fellow Instructor: Prof. Thomas Bania TF for the undergraduate course AS 107 Life Beyond Earth again	Boston University, Department of Astronomy
Fall 2023	Teaching Fellow Instructor: Prof. Paul Withers TF for undergraduate course AS 101 The Solar System	Boston University, Department of Astronomy
Spring 2021	Teaching Fellow Instructor: Prof. Elizabeth Blanton TF for undergraduate course AS 203 Principles of Astronomy II	Boston University, Department of Astronomy
Fall 2020	Teaching Fellow Instructor: Prof. Thomas Bania TF for the undergraduate course AS 107 Life Beyond Earth	Boston University, Department of Astronomy
Spring 2020	Teaching Fellow Instructor: Prof. Elizabeth Blanton TF for the undergraduate course AS 109 Cosmology	Boston University, Department of Astronomy
Spring 2017	Undergraduate Teaching Assistant Instructor: Prof. Kim-Vy Tran Undergraduate TA for the undergraduate course AS 101 Basic Astronomy	Texas A&M University, Department of Physics and Astronomy

Awards and Honors

2021-2023	Graduate School in Arts and Sciences Outstanding Teaching Fellow	Boston University
2021-2023	Massachusetts Space Grant Consortium Graduate Fellowship	NASA
Fall 2019	Dean's Fellowship Graduate Fellowship	Boston University
2017	Undergraduate Research Scholar Honors distinction awarded after the completion of my undergraduate thesis: "Identifying Galaxy Mergers in High Redshift Clusters Using the Hubble Space Telescope"	Texas A&M University
2016-2017	Louis Stokes Alliance for Minority Participation Scholarship Undergraduate research scholarship	Texas A&M University

Academic and Conference Talks

2024	25 Years of Science with Chandra Showed preliminary results of deepest Chandra observations of longest, continuous sloshing spiral in galaxy cluster	Poster talk
2023	241st Meeting Of The American Astronomical Society Showed results presented in my paper "Chandra X-Ray Observations of Abell 119: Cold Fronts and a Shock in an Evolved Off-Axis Merger"	Poster talk
2019	Yale Post-Baccalaureate Research Education Program Symposium, Yale University Presented the results of the focus of my research during the Yale PREP program.	Oral Presentation
2017	Student Research Week, Texas A&M University Presented the preliminary analysis from my Undergraduate Research Scholars Thesis.	Poster talk
2016	Astrosymposium, Texas A&M University Presented the findings of my first year of research conducted under the supervision of Prof. Kim-Vy Tran.	Oral Presentation

Professional Associations

2020–now	American Astronomical Society
2020–now	High Energy Astrophysics Division, AAS
2012–now	American Indian Science and Engineering Society

Publications

5. “*HST Grism Observations of a $z \sim 1.8$ Cluster Candidate from the Clusters Occupied by Bent Radio AGN (COBRA) Survey*”, **Watson, Courtney B.**, Blanton, E.L., Golden-Marx, E., Ashby, M.L.N., Randall, S.W., Wing, J.D., Douglass, E.M., 2025, *ApJ*, XXX, XXX
4. “*CHANDRA X-Ray Observations of Abell 119: Cold Fronts and a Shock in an Evolved Off-axis Merger*”, **Watson, Courtney B.**, Blanton, E.L., Randall, S.W., Sarazin, C.L., Sarkar, A., ZuHone, J.A., Douglass, E.M., 2023, *ApJ*, 955, 103
3. “*Solar-cycle-related Changes in the Helium Ionization Zones of the Sun*”, **Watson, Courtney B.**, Basu, Sarbani, 2020, *ApJL*, 903, L29
2. “*Galaxy Merger Fractions in Two Clusters at $z \sim 2$ Using the Hubble Space Telescope*”, **Watson, C.**, Tran, K.V., Tomczak, A., Alcorn, L., Salazar, I.V., Gupta, A., Momcheva, I., Papovich, C., van Dokkum, P., Brammer, G., Lotz, J., & Willmer, C.N.A., 2019, *ApJ*, 874, 63
1. “*Identifying Galaxy Mergers in High Redshift Clusters Using the Hubble Space Telescope*”, **Watson, Courtney** and Tran, Kim-Vy, 2017, *Texas A&M OAKTrust Repository*

In Progress

- ⚙️ “*TITLE TBD: Deep Chandra X-Ray Observations of Abell 2029*”, **Watson, Courtney**, Blanton, E. L., et. al.
- ⚙️ “*Galaxy Cluster Dynamics: Insights from Bent, Double-Lobed Radio Sources and Multiwavelength Observations*”, **Watson, Courtney**, *Dissertation*

Research Interests

Clusters of galaxies and their environments; Interactions of galaxies and surrounding cluster environments; Large-scale structure formation & evolution

Skills

</> Python, pandas, SciPy, NumPy, Matplotlib, IRAF, Anaconda, EAZY, FAST, SExtractor, Drizzlepac, CIAO, \LaTeX