

Brendan L. Mullan

CONTACT INFORMATION

919 Beech Ave #2
Pittsburgh PA 15233 USA

Mobile: +1 716-725-3288
E-mail: brendan@bmsis.org
LinkedIn: [Brendan Mullan](#)

PROFILE AND PROFESSIONAL INTERESTS

Dr. Mullan is an internationally respected Ph.D. astrophysicist, physics professor, and social entrepreneur. As a scientist and educator, he uniquely combines the skills of an extragalactic astronomer with the perspective and insight of a university instructor, planetarium director, science communicator, and education nonprofit co-founder. He has broad experience in astronomy research, as well as teaching and outreach for audiences of all ages and interests. He is universally recognized for his distinctive public savvy, enthusiasm, sense of humor, and passion for original and effective science education.

EDUCATION

The Pennsylvania State University, University Park, PA

Ph.D., **Astronomy and Astrophysics**, August 2013

- Thesis Topic: *Under Pressure: Star Clusters in the Tidal Debris of Interacting Galaxies*
- Advisor: [Professor Jane C. Charlton](#)
- Area of Study: Extragalactic Astronomy

M.S., **Astronomy and Astrophysics**, February 2010 (issued 2012)

- Comprehensive Topic: *Star Clusters in the Tidal Tails of Interacting Galaxies: Photometric Properties and the Tail Environment*
- Advisor: [Professor Jane C. Charlton](#)
- Area of Study: Extragalactic Astronomy

Colgate University, Hamilton, NY

B.A., **Astronomy-Physics**, May 2007

- *cum laude*, with High Distinction in the Core Curriculum
- Senior Thesis: *Correlations between the Spectral Energy Distributions and Environments of Intermediate Redshift Galaxies in the SPICES Survey*

AWARDS

- [Alpha Chi Honor Society](#) honorary membership for service at Point Park University (2016)
- [National Geographic Emerging Explorer](#) (2013)
- [NASA Famelab](#) science communication national champion (2012)
- [NASA Famelab](#) regional audience favorite (2012)
- [International Famelab](#) finalist (top ten worldwide; 2012)
- [NASA Pennsylvania Space Grant](#) fellow (2009–2011)
- [Zaccheus Daniel](#) fellow, Pennsylvania State University (2010)
- [Colgate University Physics and Astronomy Department Founders Award](#) for outstanding progress and achievement (2007)
- [Colgate University Dean's List for Academic Excellence](#) (2003-2007)

POPULAR SCIENCE BOOKS

- *Are We Alone? And Other Mysteries of Space*. Author of special edition "bookazine" published by National Geographic Books, 2015 (113 p).
- *Everything Space*. Authored sections on space science and astronomy. Published by National Geographic Kids Books, 2015.

- **TV/radio/podcast communications**
 - Frequent guest on KJZZ radio program *The Show* (2017–present). Public expert on astronomical events and science news.
 - Frequent guest on local NPR (WESA) program *Essential Pittsburgh* (2015–present). Public expert on astronomical events and science news.
 - Appearances on KDKA (CBS Pittsburgh): to promote the Buhl planetarium at Carnegie Science Center (2014) and explain the significance of astronomical events (2015).
 - Podcast host: “Publications with the Blue Marble Space Institute of Science”. 2013–2014.
 - Guest podcast host: “Astronomy at the Movies.” 365 Days of Astronomy podcast, 2014.
- **Popular science writing**
 - Invited popular science column: “Let’s talk about science: Time and toilet paper.” Published in the Pittsburgh Post-Gazette, 2015.
 - Invited Op-Ed article: “Those we train to think like scientists will always find new frontiers.” Published in the Pittsburgh Post-Gazette, 2014.
 - Informal blog posts in Pale Blue Blog (2012).
 - Informal blog posts: regular *Notes from the Astronomy Underground* series covering an insider’s view of academia. Sponsored by Cosmos Portal. Published in 2008 (website no longer exists).
 - Guest post for Accuweather: “Astropalooza.” 2008.
 - Guest post for Accuweather: “The Distant Fate of the Universe.” 2007.
- **Popular science journalism**
 - News article: “Scientists Find New, Inexpensive Way to Predict Alzheimer’s Disease.” Written within Penn State Research Communications (no byline) and presented to external media, 2010.
 - News article: “Brown Dwarf Pair Mystifies Astronomers.” Written within Penn State Research Communications (no byline) and presented to external media, 2009.
 - News article: “Link Uncovered Between Viral RNA and Human Immune Response.” Written within Penn State Research Communications (no byline) and presented to external media, 2009.
 - News article: “What She Sees in You – Facial Attractiveness Explained.” Written within Penn State Research Communications (no byline) and presented to external media, 2009.
 - News article: “Neveplast for Nordic – is it Really an Option?” Published in *Faster Skier*, 2008.
- **Invited encyclopedia articles**
 - Encyclopedia article: “Solar Evolution” in *The Solar System*. Fisher D., and Erickson, R., eds. Salem Press, 2009.
 - Encyclopedia article: *Spiral Galaxies*. Contributed to Encyclopedia of the Cosmos, 2008 (website no longer exists).

– Encyclopedia article: *The Morphology-Density Relation*. Contributed to Encyclopedia of the Cosmos, 2008 (website no longer exists).

REFEREED
JOURNAL
PUBLICATIONS

- [1] A Tale of Two Tails: Exploring Stellar Populations in the Tidal Tails of NGC 3256. Rodruck, M., Konstantopoulos, I., Knierman, K., Fedotov, K., **Mullan, B.**, and 5 co-authors. 2016, *Monthly Notices of the Royal Astronomical Society*, 461, 36 doi:[10.1093/mnras/stw1294](https://doi.org/10.1093/mnras/stw1294)
- [2] The \hat{G} Infrared Search for Extraterrestrial Civilizations with Large Energy Supplies III: The Reddest Extended Sources in WISE. Griffith, R. L., Wright, J. T., Maldonado, J., Povich, M. S., Sigurdsson, S., **Mullan, B.**. 2015, *The Astrophysical Journal Supplement Series*, 217, 25 doi:[10.1088/0067-0049/217/2/25](https://doi.org/10.1088/0067-0049/217/2/25)
- [3] The \hat{G} Infrared Search for Extraterrestrial Civilizations with Large Energy Supplies II: Framework, Strategy, and First Result. Wright, J. T., Griffith, R. L., Sigurdsson, S., Povich, M. S., **Mullan, B.**. 2014, *The Astrophysical Journal*, 792, 27 doi:[10.1088/0004-637X/792/1/27](https://doi.org/10.1088/0004-637X/792/1/27)
- [4] The \hat{G} Infrared Search for Extraterrestrial Civilizations with Large Energy Supplies I: Background and Justification. Wright, J. T., **Mullan, B.**, Sigurdsson, S., Povich, M. S. 2014, *The Astrophysical Journal*, 792, 26 doi:[10.1088/0004-637X/792/1/26](https://doi.org/10.1088/0004-637X/792/1/26)
- [5] Tidal Tails of Minor Mergers II: Comparing Star Formation in the Tidal Tails of NGC 2782. Knierman, K. A., Scowen, P.A., Veach, T., Groppi, C., **Mullan, B.**, and 3 co-authors. 2013, *The Astrophysical Journal*, 774, 125 doi:[10.1088/0004-637X/774/2/125](https://doi.org/10.1088/0004-637X/774/2/125)
- [6] Under Pressure: Star Clusters and the HI Medium of Tidal Tails. **Mullan, B.**, Kepley, A. A., Maybhate, A., and 9 co-authors. 2013, *The Astrophysical Journal*, 768, 194 doi:[10.1088/0004-637X/768/2/194](https://doi.org/10.1088/0004-637X/768/2/194)
- [7] Gemini Spectroscopic Survey of Young Star Clusters in Merging/Interacting Galaxies. IV: Stephan's Quintet. Trancho, G., Konstantopoulos, I. S., Bastian, N., Fedotov, K., Gallagher, S., **Mullan, B.** and Charlton, J. C. 2012, *The Astrophysical Journal*, 748, 102 doi:[10.1088/0004-637X/748/2/102](https://doi.org/10.1088/0004-637X/748/2/102)
- [8] NEOWISE Observations of Near-Earth Objects: Preliminary Results. Mainzer, A., Grav, T., Bauer, J. and 33 co-authors (including **Mullan, B.**). 2011, *The Astrophysical Journal* 743, 156 doi:[10.1088/0004-637X/743/2/156](https://doi.org/10.1088/0004-637X/743/2/156)
- [9] Star Clusters in the Tidal Tails of Interacting Galaxies: Cluster Populations Across a Variety of Tail Environments. **Mullan, B.**, Konstantopoulos, I. S., Kepley, A. A., and 17 co-authors. 2011, *The Astrophysical Journal*, 731, 93 doi:[10.1088/0004-637X/731/2/93](https://doi.org/10.1088/0004-637X/731/2/93)
- [10] Smooth and Starburst Tidal Tails in the GEMS and GOODS Fields. Elmegreen, D., Elmegreen, B., Ferguson, T., **Mullan, B.** 2007, *The Astrophysical Journal*, 663, 734 doi:[10.1086/518715](https://doi.org/10.1086/518715)

PAPERS IN
SUBMISSION

CONFERENCE
PUBLICATIONS
AND POSTERS

- [11] The unprecedented optical outburst of the quasar 3C 454.3: The WEBT campaign of 2004-2005. Villata, M., Raiteri, C. M., Balonek, T. J., and 85 co-authors (including **Mullan, B.**). 2006, *Astronomy & Astrophysics*, 453, 817 doi:10.1051/0004-6361:20064817
- [12] Population growth, doomsday, and the search for extraterrestrial intelligence. B. Mullan and J. Haqq-Misra. 2017, *Futures*, in submission
- [13] The \hat{G} Search for Advanced Extraterrestrial Civilizations: The Reddest Extended WISE Sources. Maldonado, J., Povich, M. S., Wright, J., Griffith, R. L., Sigurdsson, S., **Mullan, B.**. 2015, American Astronomical Society Meeting Abstracts, 225, #336.27 (poster)
- [14] Tidal Tales of Minor Mergers: Star Formation in Minor Merger Tidal Tails. Knierman, K., Scowen, P., Groppi, C., Veach, T., Knezek, P. M., **Mullan, B.**, Konstantopoulos, I. S., Charlton, J. C., Jansen, R., Wehner, E. 2014, TMT in the Astronomical Landscape of the 2020s, Thirty Meter Telescope Science Forum, 51 (poster)
- [15] The \hat{G} Mid-Infrared Search for Extraterrestrial Civilizations with Large Power Supplies: First Results. Povich, M. S., Wright, J. T., Griffith, R., Sigurdsson, S., Maldonado, J., , **Mullan, B.** 2014, Search for Life Beyond the Solar System. Exoplanets, Biosignatures & Instruments, P5.93 (poster)
- [16] Tidal Tales of Minor Mergers II: Comparing Star Formation in the Tidal Tails of NGC 2782. Knierman, K. A., Scowen, P. A., Veach, T., Groppi, C., **Mullan, B.**, and 3 co-authors. 2013, American Astronomical Society Meeting Abstracts #221, 221, #441.02 (poster)
- [17] Star Clusters in the Tidal Tails of Interacting Galaxies: Photometric Properties and the Tail Environment (a.k.a. Crazy Brendan's Tidal Tail Emporium). **Mullan, B.** 2010, Stellar Populations in the Cosmological Context, STScI May Symposium (poster)
- [18] Tidal Tails in Interacting Galaxies: Formation of Compact Stellar Structures. **Mullan, B.**, Charlton, J. C., Konstantopoulos, I. S., and 17 co-authors. 2010, Galaxy Wars: Stellar Populations and Star Formation in Interacting Galaxies, 423, 129
- [19] The Universe in 3D! Visualizing Astronomy at Low Cost for Education and Public Outreach. **Mullan, B.** 2010, Bulletin of the American Astronomical Society, 42, #445.07 (poster)
- [20] Star Clusters in the Tidal Tails of Interacting Galaxies- A Ubiquitous Consequence of Star Formation? **Mullan, B.** 2010, Bulletin of the American Astronomical Society, 42, #340.01 (poster)
- [21] When and Why Do Star Clusters Form in the Tidal Tails of Merging Galaxies? Charlton, J. C., **Mullan, B.**, Lee, K., and 10 co-authors. 2009, Bulletin of the American Astronomical Society, 41, #344.01 (poster)
- [22] The Effects of Interactions on Galaxy Evolution in the Early Universe. **Mullan, B.**, and Ferguson, F. 2006, Keck Northeast Astronomy Consortium Undergraduate Symposium on Research in Astronomy, 5
- [23] The Dramatic 2005 Optical Outburst of Blazar 3C 454.3. Forsyth, C., and **Mullan, B.** 2006, National Conference on Undergraduate Research (poster)

- [24] Optical Variability of the Blazar 3C 454.3: Long-term Behavior and the Dramatic 2005 Outburst. Balonek, T. J., Gadway, B., **Mullan, B.**, and 3 co-authors. 2006, American Astronomical Society Meeting Abstracts, 207, #208.06 (poster)
- [25] An Undergraduate Research Project within the ALFALFA Collaboration. Ayala, J. A., Stilp, A., Patel, N., and 22 co-authors (including **Mullan, B.**). 2005, Bulletin of the American Astronomical Society, 37, #179.21 (poster)
- [26] Analyzing the Optical Variability of the Blazar 3C 454.3. Forsyth, C., **Mullan, B.**, Gadway, B., & Wortel, S. 2005, Keck Northeast Astronomy Consortium Undergraduate Symposium on Research in Astronomy, 17

INVITED TALKS

- *Change in the Cosmos*
Lecture on astronomical, climate, economic, and population change for K-12 science teachers
 - [Keynote address](#) for the [New Jersey Science Teachers Association](#). Glassboro, NJ; Aug 17, 2017
 - [Keynote address](#) for the [Tennessee Science Teachers Association](#). Munfreesboro, TN; Dec 3, 2016
- *The Horsemen of the Mathpocalypse*
Lecture on mathematics of destructive changes on Earth
 - Invited talk during the 2017 Point Park University for the [Symposium on Apocalyptic Thinking](#). Pittsburgh, PA; Apr 21, 2017
- *From Academia to Nonprofits: Life Lessons through Stock Photos*
Lecture for early-career scientists and graduate students
 - [Keynote address](#) for the [Graduate Women in Science](#). University Park, PA; Jun 21, 2015
- *Everything in the Universe is Terrible. But Here's Why That's Awesome*
Public lecture (all ages)
 - Public lecture at the [Allegheny Observatory](#), Oct 16, 2015.
 - [Space Out Weekend lecture](#) for the [Carnegie Science Center](#). Pittsburgh, PA; Mar 28, 2015
 - [21+ Night lecture](#) for the [Carnegie Science Center](#). Pittsburgh, PA; Oct 10, 2014
 - [Friedman Lecture](#) for the [Department of Astronomy & Astrophysics](#) at the [Pennsylvania State University](#). University Park, PA; Oct 22, 2013
- *Think Like a Scientist: A Survivor's Guide to the 21st Century*
Lecture for high school assemblies
 - Presented to regional schools with [National Geographic Learning](#). Kansas City, KS; Mar 27, 2014
 - Presented to regional schools with [National Geographic Learning](#). Denver, CO; Dec 13, 2013
- *Science is Awesome and So Can You*
Lecture for high school assemblies
 - Presented to subscribing schools during a Google Hangout for [Exploring By the Seat of your Pants Space Week](#). Worldwide; Nov 17, 2017
 - Presented to regional schools with [National Geographic Learning](#). Las Cruces, NM; Nov 1, 2013
- *The Stupendous Story of Stars!*
Interactive kinesthetic activity/lecture for middle and high school audiences

- Presented to regional schools with [National Geographic Learning](#). Chicago, IL; Oct 1, 2013
 - Delivered for [Science Alive](#) program. Hong Kong Science Museum; Nov 13, 2012
- *Making Science Accessible, Engaging, and Entertaining*
Lecture/interactive seminar for educators and scientists
- [NSTA Regional Conference](#). Richmond, VA; Oct 16, 2014
 - [NSTA Regional Conference](#). Denver, CO; Dec 13, 2013
 - [Goddard Space Flight Center colloquium](#). Greenbelt, MD; Dec 3, 2013
 - [NSTA Regional Conference](#). Houston, TX; Nov 8, 2013
 - [NSTA Regional Conference](#). Las Cruces, NM; Nov 2, 2013
 - [New Mexico State University Astronomy Colloquium](#). Las Cruces, NM; Nov 1, 2013
 - [NASA JPL Mars Curiosity Educators Workshop](#). Pasadena, CA; Aug 4, 2012.
- *Interstellar Archeology: Finding Our Future*
Public lecture (all ages)
- Invited colloquium lecture at Point Park University; Feb 16, 2017
 - [National Geographic Mysteries of the Unseen World Educators Workshop](#). Washington, DC; Oct 24; 2013
 - Feature Presentation at [Astrofest](#). University Park, PA; Jul 12, 2013
 - [National Geographic Explorers Symposium](#). Washington, DC; Jun 12, 2013
- *Under Pressure: Star Clusters in the Tidal Debris of Interacting Galaxies*
Professional astronomy colloquium
- [Lycoming College Physics and Astronomy](#). Williamsport, PA; Feb 6, 2013
 - [Australian Astronomical Observatory](#). Sydney, Australia; Nov 21, 2012
- *The Mayan Apocalypse of 2012*
Café Scientifique event
- [British Council Headquarters](#). Hong Kong; Nov 12, 2012

SCIENCE
EDUCATION AND
MANAGEMENT
EXPERIENCE

Point Park University, Pittsburgh, PA

Assistant Professor of Physics

Fall 2015 – Present

- Developer and instructor of introductory college physics (Phys 101-102), university physics (Phys 201-202) physics lab (Phys 103-104), calculus (Math 190), and general science (NSET 110) courses (12-14 credit hours and about 100 students per semester)
- Developer and instructor of courses in introductory astronomy (NSET 181: Astronomy, space and time) and astrobiology (NSET 182: Are we alone? The search for life in the universe)
- Coordinator of online/in-person office hours and review sessions for all sections and classes
- Director of physics lab renovation, and designer of new facility based on best practices in physics education and education technology
- Faculty Sponsor and advisor to the Pre-Medical Club research program
- Academic advisor to students in the Funeral Services program (20–30 students/year)
- Member of the Faculty Development Committee (2016-2018)

Assistant Director, Honors Program

Spring 2017 – Present

- Reviewer and administrator of honorized contract courses
- Developer of strategic vision for the transformation from an Honors Program to an Honors College

- Faculty advisor of local chapter of the AX student honor society, including development and administration of regionally focused student service projects and scholarship contests
- Member of the Honors Program Advisory Board

The Wrinkled Brain Project, Pittsburgh, PA

Co-Founder and Director of Science **Spring 2015 – Present**

- Co-founder of nonprofit educational startup to introduce critical thinking and inquiry-based curriculum into the science classroom
- Chief scientist and science content consultant to curriculum and materials
- Co-producer and star of video content for educational products (e.g., *Gedanken*) and marketing materials
- Advisor of work-study, internship, and practicum students in video production and editing through Point Park University
- Grant writer and co-administrator, and liaison to grant-funded collaborators (e.g., [ASSET STEM Education](#)).
- Education editor of [Habitable Press](#), a popular/educational science publishing collaboration with [Blue Marble Space](#)
- Keynote speaker at student assemblies and teacher/museum educator workshops with [National Geographic Learning](#)
- Consultant and collaborator in STEM curriculum, video, and audio development for [National Geographic Education](#) and [National Geographic Learning](#) projects

Blue Marble Space Institute of Science, Seattle, WA

Freelance Educator and Education Consultant **Fall 2013 – Spring 2015**

- Host of the *Publications with the Blue Marble Space Institute of Science* podcast series (2013-2014)
- Keynote speaker at student assemblies and teacher/museum educator workshops with [National Geographic Learning](#)
- Consultant in STEM curriculum development for [National Geographic Education](#)

Carnegie Science Center, Pittsburgh, PA

Director, Buhl Planetarium and Observatory **Spring 2014 – Spring 2015**

- Directed the use and maintenance of the 50-ft digital planetarium and rooftop observatory at the Carnegie Science Center (approximately 500,000 visitors per year)
- Managed over 20 full-time and part-time employees, volunteers, and interns
- Curated and developed live and fulldome planetarium experiences for all audiences
- Wrote and administered grant requests for informal/formal education experiences and initiatives
- Organized and coordinated special events in the planetarium and observatory
- Served as the primary astronomy media (TV/radio/newspaper) contact for greater metropolitan Pittsburgh
- Developed a semester-long science internship program for college students
- Developed and directed programs/partnerships with the Pennsylvania Space Grant, Project ASTRO Network, Portal to the Public, local university astronomy departments, and other organizations

The Pennsylvania State University, University Park, PA

Science U Director/Instructor **Summer 2012 – Summer 2013**

- Developed and directed week-long “Alien AstronoMysteriEs” science camp for the [Science U](#) program

- Wrote 100+ pages of material for instruction and direction of 30 middle school campers in astrobiology
- Developed kinesthetic, visualization, and group learning activities (30+ hours of non-repeating material) in astronomy, biology, and planetary science
- Managed full staff of instructors, lab and program facilitators, camp mentors, and campers

Teaching Consultant

Spring 2012 – Summer 2012

- Consulted for development of a new introductory astronomy webcourse
 - Drafted story and narrative background for an interactive, game-based, full course in astronomy
 - Provided advice for gaming modules and curriculum

Teaching Associate

Summer 2011

- Instructed Astr 001: The Astronomical Universe for the summer semester
 - Autonomous lecturer of a full introductory college course in astronomy
 - Developed collaborative class lectures, activities, projects, and assignments based on current astronomy education research and strategies

Outreach Specialist

Fall 2007 – Summer 2013

- Streamlined online scheduling system for outreach activities and volunteers
- Managed outreach volunteer staff and planned external student field trips and intra-collegiate events
- Designed and performed outreach activities for the [Department of Astronomy & Astrophysics](#), including 3D shows, hands-on demonstrations, museum-style exhibits, kinesthetic activities, and guided "scale model" tours.
- Organized activities and personnel for multi-night "Astrofest" events
- Wrote press releases for outreach events on campus

Teaching Assistant

Fall 2007 – Summer 2013

- Developed curriculum for Astr 120: Galaxies and the Universe
 - Fall 2012 – Summer 2013
 - Wrote full semester curriculum and story narrative for undergraduate introductory astronomy class in galaxies and cosmology
- Instructor for Astr 011: Elementary Astronomy Laboratory
 - Fall 2007 – Spring 2008 (2 sections each); Summer 2011 (1 section)
 - Instructed lab courses in astronomy for non-majors
 - Held office hours and independent study sessions for any associated courses by student request
 - Wrote several new lab modules and replacement activities in extragalactic astronomy
- Course manager and grader for Astr 001: The Astronomical Universe (online)
 - Fall 2008 – Spring 2009
 - Manager, assistant, and grader of 700-person web-based Astro 001 course
 - Performed necessary updates to material
- Grader and Assistant for Astr 291: Astronomical Methods and the Solar System
 - Fall 2008
 - Responsible for grading assignments and conducting review sessions and office hours

Colgate University, Hamilton, NY

Teaching Assistant

Fall 2005 – Spring 2007

- Teaching Assistant for Phys 120
 - Fall 2005 and Fall 2006
 - Grader for introductory physics class for majors
 - Conducted weekly homework help and exam review sessions
- Teaching Assistant for Astr 102
 - Spring 2007
 - Grader for introductory astronomy class for non-majors
 - Conducted weekly homework help and exam review sessions

Outreach Volunteer

Spring 2005 – Spring 2007

- Conducted tours of **Foggy Bottom Observatory** and astronomical equipment at outreach events
- led skygazing groups and night sky tours

SCIENCE
WRITING
EXPERIENCE

Freelance Science Writer

Freelance Science Writer

Fall 2007–Present

- See publication list for popular books and articles

The Pennsylvania State University, University Park, PA

Penn State Research Communications Intern

Summer 2009

- Advisor: Andrea Messer
 - Trained in AP style journalism
 - Wrote news articles covering astronomy, neuroscience, biology, and psychology

RESEARCH
EXPERIENCE

Blue Marble Space Institute of Science, Seattle, WA

Research Scientist

Fall 2013 – Present

- Referee for the International Journal of Astrobiology
- Contributor to extragalactic SETI (Search for Extraterrestrial Intelligence) projects with wide-field infrared surveys and photometric studies of interacting galaxies
- Expertise: Distinguishing possible large-scale, distant extraterrestrial artifacts from interacting galaxies, and characterization of stellar populations in tidal tails

The Pennsylvania State University, University Park, PA

Graduate Researcher

Spring 2008 – Summer 2013

- Advisor: **Professor Jane C. Charlton**
- Calibrated, reduced, and analyzed optical images from the *Hubble Space Telescope* of tidal debris fields in interacting galaxies
- Optimized an automated search for unresolved star cluster candidates in tidal debris and photometrically characterized the results
- Compared star cluster candidate populations with global galactic phenomenology and interaction characteristics
- Began campaign to image physically interesting regions of interacting galaxies in rest-frame H α wavelengths
- Analyzed interferometric 21-cm data to interpret physical conditions (pressures and densities) guiding star cluster formation in tidal debris

Colgate University, Hamilton, NY

Senior Thesis

Fall 2006 – Spring 2007

- Advisor: [Professor Thomas Balonek](#)
- Analyzed and quantified optical and near infrared, ground-based photometry of galaxies at intermediate redshifts taken in the [SPICES](#) survey
- Extensively modeled spectral energy distributions of evolving galaxies and cosmological effects
- Wrote fitting algorithms to compare models with data and compare results across different galaxy environments

Keck Northeast Astronomy Consortium REU

Summer 2006

- Advisor: [Professor Debra Elmegreen](#)
- Detected and characterized tidal and/or star-forming features in intermediate-redshift galaxies imaged in the multiwavelength [GEMS](#) and [GOODS](#) campaigns with the *Hubble Space Telescope*
- Characterized properties (e.g., mass, age, etc.) of tidal debris and star-forming structures
- Extensively compared results to literature on low- and high-redshift analogue systems

Summer Research Project:

Summer 2005

- Advisor: [Professor Thomas Balonek](#)
- Monitored optical quasar variability at [Foggy Bottom Observatory](#)
- Collaborated with international observing team to coordinate multiwavelength followup observations

AFFILIATIONS AND MEMBERSHIPS	American Astronomical Society	2007 – Present
	National Geographic Society	2013 – Present
	$\Sigma\Pi\Sigma$ Physics Honor Society	2006 – Present
	Society of Physics Students	2006 – Present
	Blue Marble Institute of Science	2013 – Present
	American Association for the Advancement of Science	2015 – Present
	Alpha Chi Honor Society	2016 – Present
	Engineers' Society of Western Pennsylvania	2016 – Present

HARDWARE AND
SOFTWARE SKILLS

Computer Programming:

- UNIX shell scripting, IRAF, IDL, AIPS, Ds9

Productivity Applications:

- $\text{T}_{\text{E}}\text{X}$ ($\text{L}_{\text{A}}\text{T}_{\text{E}}\text{X}$, $\text{B}_{\text{I}}\text{B}_{\text{T}}\text{E}_{\text{X}}$); Vim/Vi, kate, emacs, and other editors
- Most common productivity packages (for Windows, OS X, and Linux platforms), e.g., Gimp/Photoshop, iMovie, Microsoft Office, Open Office, iWork, etc.
- Most social media, e.g., Facebook, Twitter, blogs
- Learning management software: Angel, Blackboard

Outreach Technology:

- Sky-Scan Digital Universe, Spitz Nova III planetarium, Geowall/Astrowall dual polarization projector system
- Digital Universe Atlas software, Stellarium, World Wide Telescope, Google Earth/Sky, Starry Night, Partiview
- Citizen Science software (e.g., Planet Hunters, Galaxy Zoo, Zooniverse, etc.)
- Outreach telescopes (mid- to professional-sized Dobsonian and Cassegrain instruments), sunspotter, and compound microscopes

Operating Systems:

- Microsoft Windows family, Apple OS X, Linux, Solaris, and other UNIX variants

Analog and Digital Electronics:

- soldering and assembly of basic analog and digital components

EXPERTISE

Astronomy:

- Extragalactic astronomy, galaxy evolution and interactions, triggered star formation, stellar populations, clustered star formation
- Optical and near-infrared astronomy (ground- and space-based), broadband photometry, radio astronomy, designing IDL pipeline analysis, gaussian fitting, spectral modeling, stellar population synthesis, mapping and analysis of interferometric data

Formal Education:

- Undergraduate physics and math curricular development and teaching for science and engineering majors
- Undergraduate physics, math, astrobiology, and astronomy curricular development and teaching for nonmajors
- College academic program development and administration
- online and on-ground course design and development

Informal Education and Communication:

- Directing and managing education and outreach projects and personnel
- Managing networks and collaborations with educators and scientists
- Public lectures, videos, interviews, and written pieces on topical science subjects
- Ages: 5+ (25–40 preferred for public events)

REFERENCES
AVAILABLE TO
CONTACT

[Dr. Jane C. Charlton](mailto:jcc12@psu.edu) (e-mail: jcc12@psu.edu; phone: +1 (814) 863-6040)

- Professor, [Astronomy & Astrophysics](#), [The Pennsylvania State University](#)
- ◇ 515B Davey Lab, University Park, PA 16802
- ★ *Dr. Charlton was my graduate Advisor.*

[Dr. Christopher Palma](mailto:cxp137@psu.edu) (e-mail: cxp137@psu.edu; phone: +1 (814) 865-2255)

- Senior Lecturer, [Astronomy & Astrophysics](#), [The Pennsylvania State University](#)
- ◇ 419 Davey Lab, University Park, PA 16802
- ★ *Dr. Palma and I collaborated on many outreach activities and events. He also oversees the department's teaching assistants.*

[Ms. Amanda Joy](mailto:ajoy@wrinkledbrainproject.org) (Ithaca College, B.A., Biology, 2007) (e-mail: ajoy@wrinkledbrainproject.org; phone: +1 (315) 317-6422)

- Co-founder and Director of Education, [The Wrinkled Brain Project](#)
- Education Manager, [Pittsburgh Botanic Garden](#)
- ◇ 4799 Pinkerton Run Road, Oakdale, PA 15071
- ★ *Ms. Joy and I founded and operate our nonprofit education startup, [The Wrinkled Brain Project](#).*