

# REBECCA ANNE PHILLIPSON

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## EDUCATION

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<b>Drexel University</b> , Philadelphia PA Ph.D. Physics Thesis: "Investigating Nonlinear Time Variability of Accretion Disks around Compact Objects"	August 2020
<b>Drexel University</b> , Philadelphia PA M.S. Physics Candidacy Thesis: "Simulating a Black Hole Accretion Disk using <i>PLUTO</i> "	June 2017
<b>Colorado State University</b> , Fort Collins CO B.S. Physics	May 2015
<b>University of Colorado</b> , Boulder CO B.A. Astronomy	May 2013

## FELLOWSHIPS and AWARDS

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NSF MPS-Ascend Postdoctoral Fellow \$300,000 Grant over 3 years	September 2021 – present
University of Washington eScience Institute, Data Science Fellow \$5000 Inaugural Award - Sept. '20, \$5000 Research Grant - Jun. '21, \$5000 Research Grant - Mar. '22	September 2020 – present
NASA Harriett G. Jenkins Graduate Research Fellow \$220,000 Grant over 4 years	September 2016 – August 2020
Department of Physics Common Good Award	June 2019
John Mather Nobel Scholar \$3000 Travel Grant over 3 years	July 2015 – July 2018
APS Four Corners Annual Meeting Outstanding Poster Presentation \$100 Award	October 2014
Chancellor's Achievement Scholar, University of Colorado	August 2006 – May 2008
Presidential Scholar, University of Colorado	August 2006 – May 2008

## PUBLICATIONS

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- "Correlated Spectral and Recurrence Variations in Cygnus X-1"  
E.M. Broadbent<sup>1</sup> and **R.A. Phillipson**, MNRAS, **2022**, *in review*
- "Investigating Non-linear and Stochastic Hard X-ray Variability of Active Galactic Nuclei"  
**R.A. Phillipson**, M.S. Vogeley, P.T. Boyd, MNRAS, **2022**, *accepted*
- "Complex Variability of Kepler AGN Revealed by Recurrence Analysis"  
**R.A. Phillipson**, P.T. Boyd, A.P. Smale, M.S. Vogeley, MNRAS, **2020**, Volume 497, Issue 3
- "The Chaotic Long-term X-ray Variability of 4U 1705-44"  
**R.A. Phillipson**, P.T. Boyd, A.P. Smale, MNRAS, **2018**, Volume 477, Issue 4
- "Low Mass X-ray Binary 4U1705-44 Exiting an Extended High X-ray State"  
ATel #10742; **R. Phillipson**, P.T. Boyd, A.P. Smale; 13 Sep **2017**

## INVITED TALKS

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- July 2022: *STROBE-X Science Working Group*, Accretion Physics Sub-group  
February 2022: *University of Washington*, Department of Astronomy Colloquium  
April 2021: *Harvard University*, CHASC Center for Astrostatistics Seminar

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<sup>1</sup> *Advised Student (Undergraduate)*

November 2020: *eScience Institute*, Postdoctoral Data Science Seminar

November 2019: *Institute for Advanced Study*, Astrophysics Coffee Hour

November 2019: *Stanford University/KIPAC* Tea Talk

August 2019: *Space Telescope Science Institute*, Galaxy Lunch Talk

## CONTRIBUTED TALKS and PRESENTATIONS

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“Ensemble Dynamical Classification of X-ray Binaries”

Contributed Talk: AAS High Energy Astrophysics Divisional Meeting, March 2022

“Complex Long-term Variability of XRBs and AGN Revealed by Novel Methods”

Contributed Talk: American Astronomical Society Summer Meeting, June 2020

“Diverse Time Variability of Accreting Systems Revealed by Novel Techniques”

Contributed Talk: Joint Space-Science Institute Workshop, Annapolis, MD, November 2019

“Complex Variability of AGN and XRBs Revealed by Recurrence Analysis”

Poster: American Astronomical Society Winter Meeting, January 2019

“A Global Three-Dimensional Radiation Magneto-Hydrodynamic Simulation of Self-Gravitating Accretion Disks”

Poster: American Astronomical Society Winter Meeting, January 2018

“Simulating a Thin Accretion Disk Using PLUTO”

Poster: American Astronomical Society, High Energy Astrophysics Division Meeting, August 2017

“The Long-term Variability of X-ray Binary 4U 1705-44”

Poster: American Astronomical Society, High Energy Astrophysics Division Meeting, April 2016

“Characterizing the Long-term Variability of X-ray Binary 4U1705-44: Evidence for an Underlying Double-Welled Nonlinear Oscillator”

Poster: American Physical Society Four Corners Annual Meeting, October 2014

## RESEARCH

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### **NSF MPS-Acend Postdoctoral Fellow**

Villanova University Physics Department

August 2022 – present

Sponsoring Scientist: Dr. Joey Nielsen

University of Washington Department of Astronomy

September 2021 – present

Sponsoring Scientist: Dr. Eric Bellm

### **University of Washington Department of Astronomy**

September 2020 – August 2021

Postdoctoral Scholar

Advisor: Dr. Eric Bellm

### **Drexel University Physics Department**

September 2015 – August 2020

Graduate Research Fellow

Advisor(s): Dr. Michael Vogeley, Dr. Steve McMillan

Thesis Title: Investigating Nonlinear Variability of Accretion Disks around Compact Objects

### **NASA Goddard Space Flight Center**

June 2015 – August 2015

Undergraduate Summer Intern

Advisor(s): Dr. Patricia Boyd, Dr. Alan Smale, High-Energy Astrophysics Division

Project Title: Characterizing the Long-term Variability of X-ray Binary 4U1705-44

### **Colorado State University Physics Department**

August 2014 – May 2015

Undergraduate Research Assistant

Advisor(s): Dr. Patricia Boyd (NASA Goddard), Dr. Richard Eykholt (CSU)

### **NASA Goddard Space Flight Center**

June 2014 – August 2014

Undergraduate Summer Intern

Advisor(s): Dr. Patricia Boyd, Dr. Alan Smale, High-Energy Astrophysics Division

Project Title: Characterizing the Long-term Variability of X-ray Binary 4U1705-44

## **Center for Astrophysics & Space Astronomy**

July 2012 – August 2013

### Undergraduate Research Assistant

Advisor: Dr. Theodore Snow

Project Title: Carriers, Charge State and Diagnostic Use of the Long-Mysterious Diffuse Interstellar Bands

### Senior Research Project - ASTR 3520

Advisor(s): Dr. Emily Levesque, Dr. Erica Ellingson

Project Title: The Relationship Between Supernova Type and Host Galaxy Metallicity

## **TEACHING, TRAINING and MENTORSHIP**

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**University of Washington** – Pre-Major in Astronomy Program Mentor, September 2020 – August 2022

Mentees: Chloe Lau ('21), Caleb de Los Angeles ('21), AuDuyen Trinh ('20), Simon Dawson ('20)

### **Villanova University:**

PHYS 2200: Physics 1 for Engineers – Course Instructor – Spring Semester, 2023

*Course curriculum and active learning design: Lecture polling (Learning Catalytics), group tutorials (POGIL framework), combined lecture and recitation format*

### **Student Collaborators:**

Caleb de Los Angeles, University of Washington, September 2021 – Present

*Pre-MAP Mentee; Undergraduate Research Assistant*

Emily Broadbent, University of Washington, March 2021 – Present

*NASA Space Grant Consortium SURP '21 Mentee; Undergraduate Research Assistant*

Keri Heuer, Drexel University, September 2020 – May 2022

*PhD Oral Qualifying Exam Research Project*

James Howley, Drexel University, September 2017 – June 2018

*Senior Research Thesis, "Correlation of Observed Phenomena in X-ray Binaries by Light Curve Simulation"*

**Drexel PROFESS** – Graduate Coursework in Undergraduate STEM Education

Foundations of Evidence-based STEM Pedagogy, Fall 2019

Advanced Undergraduate STEM Pedagogical Techniques, Winter 2020

**Center for the Integration of Research, Teaching and Learning (CIRTL)** Coursework

Equity in STEM for All Genders, Fall 2018

Diversity in the College Classroom, Spring 2019

**Drexel University Graduate Teaching Assistant**, September 2015 – August 2016

*Introductory Physics sequence for Engineers; Introductory Physics for Art Design Majors; Conceptual Physics*

**CU STARS** (Science, Technology and Astronomy Recruits) Internship, May 2013

*Designed and taught an astronomy lesson plan for 6<sup>th</sup> and 9<sup>th</sup> grade at Lyons Middle-High School*

**CU Teach Step 1/2 Combo Education Class** (EDUC 2010), August 2010 – December 2010

*A 2-credit course teaching 6th-grade math weekly at Scott Carpenter Middle School in Denver, CO*

## **OBSERVING**

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**Sommers-Bausch Observatory**, University of Colorado

August 2012 – May 2013

24-inch Boller & Chivens; Imaging with SBIG ST-8 CCD; Spectroscopy

**Apache Point Observatory**, ARCS 3.5m, Sunspot, New Mexico

April 2013, September 2020 - Present

ARCS 3.5m; Spectroscopy with Dual-Imaging Spectrograph

## **PUBLIC OUTREACH, SERVICE and PROFESSIONAL DEVELOPMENT**

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### **Panel & Peer Reviews:**

NuSTAR, Chandra, and NICER Guest Observer Proposals (2021-present), NASA ADAP Proposals (2021-Present), DiRAC Postdoctoral Fellowship Search Committee (2022)

### **Research Collaborations:**

STROBE-X Science Working Group April 2022 – Present  
Zwicky Transient Facility Collaboration April 2021– Present

### **Organizational Leadership & Service:**

Postdoctoral Data Science Seminar *Co-Chair*, eScience Institute June 2021– Present  
Department of Physics DEI Committee *Member*, Drexel University August 2020 – December 2020  
Minorities & Women in Physics Committee, Drexel University August 2017 – July 2020  
*Founder, President*  
Physics Graduate Student Association, Drexel University June 2017 – May 2019  
*V.P. of Finance, Marketing Director*

### **Outreach & Advocacy:**

AAS Policy Advocate to OSTP/OMB, Congressional Committees July 19-20, 2022  
AAS Congressional Visit Days May 3-5, 2022  
AAS Astronomy Ambassadors Program January 2022 - Present  
NASA Black Hole Week, Reddit AMA September 2019  
AAS “Paint Your Research!” Splinter Session, *Organizer* January 10, 2018  
Philadelphia Science Festival, *Table Organizer, Volunteer* April 2016/18/19  
Astronomy Day at University of Colorado, *Volunteer* April 5, 2014

### **Professional Development:**

American Physical Society, Member October 2014 – Present  
American Astronomical Society, Member September 2017 – Present  
Inclusive Astronomy 2 Conference, Attendee October 14-15, 2019  
International High-Performance Computing Summer School June 2017  
NASA Goddard Python Boot Camp July 2014  
Conference for Undergraduate Women in Physics January 2013

## **NON-ACADEMIC PROFESSIONAL EXPERIENCE**

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**Academic Networking & Computing Services, Colorado State University** August 2013 - May 2015  
Computer Diagnostic Center Technician

Computer software and hardware diagnostics and repair for students, faculty, and staff

**Office of Information Technology, University of Colorado** July 2012 – August 2013  
System Administrator

Management of Windows-Mac OS dual-boot Norlin Library enterprise iMac computers

**Geek Squad** January 2010 – July 2012

Sr. Counter Intelligence Agent (Computer Repair Technician)

Advanced software & hardware repairs to PC and Apple laptops & desktops; technical support over phone and email; consultations on software & services based on client needs

**WSI ePro Marketing** January 2008 – May 2013

SEO Specialist/ Blogger/ Researcher

Search engine optimization via website content generation and database registration