

DEBORAH FERGUSON

PhD Student

School of Physics, Center for Relativistic Astrophysics
Georgia Institute of Technology

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Education:

- M.S., Physics, Georgia Institute of Technology, 2017
- B.S., Physics, University of Kentucky, 2016, *summa cum laude*,
Mathematics and Computer Science Minors

Research Positions:

- Using Compact Binary Coalescences to Probe Strong-Field Gravity
Institute: Georgia Institute of Technology
Level: Graduate
Years: 2016-Present
Advisor: Deirdre Shoemaker
- Milky Way Tomography with K and M Dwarf Stars: The Vertical Structure of the Galactic Disk
Institute: University of Kentucky
Level: Undergraduate
Years: 2014-2017
Advisor: Susan Gardner
- Using Resonant Frequencies and Overtones to Calculate the Sound Velocity of TIPS Pentacene
Institute: University of Kentucky
Level: Undergraduate
Years: 2013-2014
Advisor: Joseph Brill
- Developing a Mobile Physics Engine Modeling Two Dimensional Elastic and Inelastic Collisions for the Educational Demonstration of Physics Phenomena
Institute: University of Kentucky
Level: Undergraduate
Years: 2013-2014
Advisor: Jerzy Jaromeczyk
- Impact of Chemical Extracts of Seeds from Endophyte Infected and Non-Infected Tall Fescue on Soil Microbial Communities
Institute: University of Kentucky
Level: High School
Years: 2012-2013
Advisor: David McNear
- Testing the Accuracy of the Honeywell HMC5883L 3-axis Magnetometer
Institute: University of Kentucky
Level: High School
Years: 2011-2012
Advisor: Christopher Crawford

Honors and Awards:

- 2016 - Georgia Tech Institute Fellowship (Georgia Institute of Technology)
- 2016 - Outstanding Senior in Physics (University of Kentucky)
- 2015 - Oswald Award Honorable Mention (University of Kentucky)
- 2015 - First Place in University of Kentucky ACM Chapter Algorithmic Programming Competition (University of Kentucky)
- 2015 - Summer Research Grant (University of Kentucky)
- 2015 - Outstanding Junior in Physics (University of Kentucky)
- 2014 - 42nd in United States in IEEEExtreme 24-Hour Programming Competition (IEEE)
- 2013 - Singletary Scholarship (University of Kentucky)
- 2013 - National Merit Finalist (National Merit Scholarship Foundation)

Teaching:

- Spring 2018 - Head TA for Introductory Physics I
- Fall 2017 - TA for Honors Introductory Physics II
- Summer 2017 - TA for Online Introductory Physics I
- Spring 2017 - TA for Introductory Physics II
- Fall 2017 - TA for Introductory Physics I

Publications:

- D. Ferguson, S. Gardner, and B. Yanny, “Milky Way Tomography with K and M Dwarf Stars: The Vertical Structure of the Galactic Disk”, *ApJ* 843, 141 (2017) arXiv:1706.01900
- J. Healy, et al., “Targeted numerical simulations of binary black holes for GW170104”, *Phys. Rev. D* 97, 064027 arXiv:1712.05836

Presentations:

- Ferguson, D. et al. (2018 Apr) “Revealing the Final Black Hole from Signal at Maximum Amplitude”, American Physical Society April Meeting, Columbus OH
- Ferguson, D. et al. (2017 Oct) “Apparent Horizon Dynamics of Binary Black Hole Systems”, Georgia Regional Astronomers Meeting, Athens GA
- Powell, C., Ferguson, D. (2014 Apr) “A Mobile Physics Engine Modeling Two Dimensional Elastic and Inelastic Collisions for the Educational Demonstration of Physics Phenomena”. National Conference on Undergraduate Research, Lexington KY

Leadership and Outreach:

- 2018 - Served on Undergraduate Research Panel at Society of Women in Physics Conference
- 2017-Present - Vertically Integrated Projects Mentor
- 2017-Present - Graduate Association of Physics Mentor
- 2013-2016 - Presented at University of Kentucky Engineering Fair

Professional Service:

- 2017 - Served as scribe for NASA Astrophysics Theory Program Review Panel