

Curriculum Vitae: Samuel John Dunham

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Department of Astronomy

6301 Stevenson Center

Nashville, TN, 37212

Education

Vanderbilt University, Nashville TN

Ph.D Astrophysics, May 2023 (expected)

Fisk University, Nashville TN

M.A. Physics, May 2019 (expected)

University of Michigan, Ann Arbor MI

B.S. Astronomy and Astrophysics, May 2016

B.S. Interdisciplinary Physics with Astronomy, May 2016

- Graduated Magna Cum Laude
- Physics GRE, 78th percentile

Washtenaw Community College, Ann Arbor MI

Associate's Degree in General Studies in Math and Natural Science, May 2013

Honors/Awards

- Graduated with high honors from University of Michigan
- Graduated with high honors from Washtenaw Community College

Fellowships/Grants

- Received McMinn summer research fellowship for outstanding students in the Department of Physics and Astronomy (May 2019)
- Received McMinn summer research fellowship for outstanding students in the Department of Physics and Astronomy (May 2018)
- Received honors grant for poster presentation at American Astronomical Society (AAS) conference (January 2016)

Research Experience

Vanderbilt University, Nashville TN

Research Assistant, 08/2016 - Present

- Developing module to solve general relativistic hydrodynamics equations with a discontinuous Galerkin method as part of a new code designed to simulate core-collapse supernovae

University of Michigan, Ann Arbor MI

Research Assistant, 06/2014 - 05/2016

- Analyzed data for multiple images of background sources due to strong gravitational lensing by galaxy clusters
- Found robust lens models for several galaxy clusters, from which was deduced the mass of the cluster core, the total magnification provided by the cluster, the location of the source, and its morphology

Training/Development

Michigan State University, East Lansing MI

Binary Neutron Star Merger Summer School, 05/16/2018 – 05/18/2018

Vanderbilt University, Nashville TN

Statistics Workshop for Astronomers, 05/05/2017 – 05/11/2017

Publications

Samuel J. Dunham, et al., “Lens Model and Source Reconstruction Reveal the Morphology and Star Formation Distribution in the Cool Spiral LIRG SDSS J1438+1454”, (2019) *ApJ*, 875:18

Eirik Endeve et al., “**thornado**-hydro: towards discontinuous Galerkin methods for supernova hydrodynamics”, (2019) *J. Phys.: Conf. Ser.* **1225** 012014

Presentations

Samuel J. Dunham, et al., “A Discontinuous Galerkin Method for General Relativistic Hydrodynamics in **thornado**”, APS April 2019, oral

Samuel J. Dunham, et al., “A Discontinuous Galerkin Method for General Relativistic Hydrodynamics”, APS April 2018, poster

Samuel J. Dunham, et al., “Strong Lens Models for 10 Galaxy Clusters from the Sloan Giant Arcs Survey”, AAS January 2016, poster

Other Publications, Dissemination, and/or Products

- Github page: <https://github.com/samueljdunham>
- Professional website: <https://www.samueljdunham.com>

Collaborating Researchers and Institutions

- Profs. Anthony Mezzacappa and Eirik Endeve, University of Tennessee at Knoxville, Oak Ridge National Laboratory: developing module to solve general relativistic hydrodynamics equations using discontinuous Galerkin method
- Prof. Kelly Holley-Bockelmann, Vanderbilt/Fisk Universities: developing code to calculate gravitational wave strain of orbiting binary black holes
- Prof. Keren Sharon, University of Michigan: analyzed HST data to produce gravitational lens models of galaxy clusters

Skills

Mathematics

Critical thinking

Pattern recognition

Statistical analysis

Proficient in Python 2/3, Fortran 90, Bash, Linux/Unix

Familiar with C++, SQL