Curriculum Vitae: Samuel John Dunham

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Department of Physics & Astronomy
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Education

Vanderbilt University, Nashville TN
Ph.D. Astrophysics, May 2024 (expected)

Fisk University, Nashville TN
M.A. Physics, December 2018

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

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 2020)
- 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 code to solve general relativistic hydrodynamics equations with Runge–Kutta discontinuous Galerkin methods, which will run in parallel on hetereogeneous architectures

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., "A discontinuous Galerkin method for general relativistic hydrodynamics in thornado", (2020) J. Phys.: Conf. Ser. **1623** 012012

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

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

Presentations

Samuel J. Dunham, et al., "A Discontinuous Galerkin Method for General Relativistic Hydrodynamics in `thornado`", AstroNum 2019, oral

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

Outreach

- Participated twice in Skype-a-Scientist (2020)
- Led a two-week computational bootcamp for incoming Fisk-Vanderbilt Masters-to-PhD Bridge students (August 2022)

Skills

- Proficient in Python and Fortran90
- Familiar with Juliad and C++
- Experience with high-performance computing

- Experience with programming for GPUs via OpenACC and OpenMP offloading

Misc

- GitHub page: `https://www.github.com/dunhamsj`
- Professional website: `https://www.samueljdunham.com`