SCOTT LUCCHINI

774.262.9534 • lucchini@wisc.edu 58 Bradford Ln • Madison, WI 53714

EDUCATION

University of Wisconsin – Madison **Madison, WI**
Master of Arts in Physics *August 2020*
PhD in Physics *in progress*

- Overall GPA: 4.0 (out of 4.0)
- Completed required core coursework in classical mechanics, quantum physics, thermodynamics, and electricity & magnetism, in addition to electives in cosmology, relativity, and astronomy

University of Edinburgh **Edinburgh, UK**
Master of Science with Distinction in Theoretical Physics *August 2017*

- Overall grade: 1st Class (US equivalent: A)
- Took courses in quantum field theory, group theory, general relativity, and differential geometry

University of Rochester **Rochester, NY**
Bachelor of Science in Physics and Astronomy *May 2014*

- Overall GPA: 3.91 and Math & Science GPA: 3.93 (out of 4.0)
- Minor in Japanese language and three course cluster in linguistics

REFEREED PUBLICATIONS

Wavelet transformations as a method of detecting moving groups in Gaia data *Paper in prep. (2020)*
Pellett, E., **Lucchini, S.**, D'Onghia, E.., 2020, *ApJ*, in prep.

The Magellanic Corona and its effect on the ionization of the Magellanic System *Paper in prep. (2020)*
Lucchini, S., D'Onghia, E., Fox, A. J., Bustard, C., Bland-Hawthorn, J., & Zweibel, E., 2020, *ApJ*, in prep.

The Magellanic Corona as the key to the formation of the Magellanic Stream *Published Paper (2020)*
Lucchini, S., D'Onghia, E., Fox, A. J., Bustard, C., Bland-Hawthorn, J., & Zweibel, E. 2020, *Nature*, 585, 203

Using kinematic properties of pre-planetary nebulae to constrain engine paradigms *Published Paper (2014)*
Blackman, E. G., & **Lucchini, S.** 2014, *MNRAS*, 440, L16

Preliminary Analysis of ULPC Light Curves Using Fourier Decomposition Technique *Published Paper (2013)*
Ngeow C.-C., **Lucchini S.**, Kanbur S., Barrett B., & Lin B. 2013, ArXiv e-prints, 1309.4297

PRESENTATIONS AND CONFERENCES

On the Origin, Nature, and Mixing of Multiphase Gas in Astrophysics *Attendee (2020)*
KITP, UC Santa Barbara (virtual)

Progress on understanding the formation of the Magellanic Stream *Seminar (2019)*
Galactic Dynamics Group Meeting CCA, Flat Iron Institute, New York

New models of the origin of the Leading Arm and the Magellanic Stream *Conference Talk (2019)*
A synoptic view of the Magellanic Clouds: VMC, Gaia and beyond ESO, Garching, Germany

The Quantum Nature of Self-Dual Yang-Mills Theory *Masters Dissertation Seminar (2017)*
University of Edinburgh Department of Physics Edinburgh, UK

A Preliminary Study of Active Region Canopies with AIA *Poster Presentation (2013)*
221st American Astronomical Society Meeting Long Beach, CA

AWARDED GRANTS AND FELLOWSHIPS

Cycle 28 Hubble Space Telescope Archival Research Proposal *May 29, 2020*

- Co-I on "Searching for the LMC Corona: The missing element for the formation of the Magellanic Stream" for $378,234

Wisconsin Space Grant Consortium Research Fellowship *April 24, 2020*

- Received grant funding for my work "The Magellanic Corona: The Source of Ionized Gas for the Magellanic Stream"

RESEARCH AND PROFESSIONAL EXPERIENCE

UW Madison Department of Physics **Madison, WI**

PhD Research *November 2018 - present*

- Working with Professor Elena D'Onghia on N-body simulations of the formation and evolution of the Magellanic Stream
- Using the UW Madison HPC cluster to generate galaxy initial conditions and execute GIZMO simulation code
- Writing custom analysis code in Python to compare simulations with observations in a variety of ways including plotting spatial extent, column density, and ionization, in addition to calculating masses and temperatures.

Teaching Assistant *August 2017 – May 2020*

- Working as a teaching assistant for undergraduate dynamics and undergraduate electricity and magnetism courses, with responsibilities for leading workshop discussions and labs
- Grading exams and lab reports

University of Edinburgh Department of Physics **Edinburgh, UK**

Master's Dissertation *August 2016 - August 2017*

- Worked with Professor Donal O'Connell on self-dual Yang-Mills theory to learn methods for quantum field theory calculations
- Performed one-loop calculations to determine the effective action of the theory

Jorsek, LLC **Rochester, NY**

Software Developer *June 2014 - August 2016*

- Built customized front end capabilities for individual customers
- Developed features and fixed bugs in the codebase using Java and XML-based scripting languages

University of Rochester Department of Physics and Astronomy **Rochester, NY**

Research Assistant *August 2012 - April 2013*

- Assisted Professor Eric Blackman with comparing multiple competing theories for proto-planetary nebulae jet formation
- Used AstroBEAR AMR simulation code to model jets in 3-D to constrain energy requirements on proto-planetary nebulae objects

Teaching Intern *August 2010 - December 2012*

- Led labs and workshop sessions and graded coursework and exams for a variety of courses
- Troubleshot lab equipment (oscilloscopes, function generators, various computer programs)

Harvard-Smithsonian Center for Astrophysics **Boston, MA**

Solar REU Intern *June - August 2012*

- Assisted Dr. Steve Saar with developing automated solar "canopy" region detection program using IDL and UNIX
- Analyzed regions over time and identified several cases of interesting evolutionary properties

State University of New York at Oswego **Oswego, NY & National Central University, Taiwan**

Astronomy REU Intern *June - August 2011*

- Assisted Professor Shashi Kanbur with comparing pulsation characteristics of ultra-long period Cepheid variable stars with characteristics of well-known classical Cepheids and Mira variables

ACADEMIC AWARDS

UW Madison Karl Guthe Jansky and Alice Knapp Jansky Scholarship *May 7, 2020*

- Awarded to an outstanding graduate student interested in astrophysics/radio astronomy

UW Madison Best TA Award – Fall 2019 *May 7, 2020*

- Awarded to recognize teaching excellence in the department

UW Madison Best TA Award – Fall 2017 *May 3, 2018*

UW Madison Van Vleck Fellowship *August 2018*

- One-year merit-based fellowship awarded to incoming doctoral students

University of Rochester Undergraduate Teaching Award *May 19, 2013*

- Awarded for outstanding performance as a Teaching Intern in the Department of Physics and Astronomy

Professors' Choice Award, Undergraduate Research Expo *April 19, 2013*

- Received for excellence in poster presentation of "Jazz Dance and the Integration of America."

Phi Beta Kappa Iota Book Award 2010 *November 30, 2010*

- Awarded for scholarly achievement, humanistic values, co-curricular activity, and leadership potential