

# SCOTT LUCCHINI

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## EDUCATION

### University of Wisconsin – Madison

Master of Arts in Physics (GPA: **4.0**/4.0)

PhD in Physics

Madison, WI

August 2020

in progress

### University of Edinburgh

Master of Science with Distinction in Theoretical Physics (**1<sup>st</sup> Class**, US equivalent: **A**)

Edinburgh, UK

August 2017

### University of Rochester

Bachelor of Science in Physics and Astronomy (GPA: **3.91**/4.0)

Rochester, NY

May 2014

## REFEREED PUBLICATIONS

### Wavelet transformations as a method of detecting moving groups in Gaia data

Pellett, E., **Lucchini, S.**, D'Onghia, E., 2021, *MNRAS*, in prep.

*Paper in prep. (2021)*

### The Magellanic Corona and its effect on the ionization of the Magellanic System

**Lucchini, S.**, D'Onghia, E., Fox, A. J. 2021, *ApJ*, in prep.

*Paper in prep. (2021)*

### The Magellanic Stream at 20 kpc: A New Orbital History for the Magellanic Clouds

**Lucchini, S.**, D'Onghia, E., Fox, A. J. 2021, *ApJL*, accepted.

*Accepted Paper (2021)*

### The Magellanic Corona as the key to the formation of the Magellanic Stream

**Lucchini, S.**, D'Onghia, E., Fox, A. J., Bustard, C., Bland-Hawthorn, J., & Zweibel, E. 2020, *Nature*, 585, 203

*Published Paper (2020)*

### Using kinematic properties of pre-planetary nebulae to constrain engine paradigms

Blackman, E. G., & **Lucchini, S.** 2014, *MNRAS*, 440, L16

*Published Paper (2014)*

### Preliminary Analysis of ULPC Light Curves Using Fourier Decomposition Technique

Ngeow C.-C., **Lucchini S.**, Kanbur S., Barrett B., & Lin B. 2013, ArXiv e-prints, 1309.4297

*Published Paper (2013)*

## PRESENTATIONS AND CONFERENCES

### The Magellanic Stream: Implications of the Magellanic Corona and new Orbital Histories of the Clouds

52<sup>nd</sup> Division on Dynamical Astronomy of the AAS Annual Meeting

*Conference Talk (2021)*

Virtual

### The Magellanic Corona as the key to the formation of the Magellanic Stream

237<sup>th</sup> American Astronomical Society Meeting

*Conference Talk (2021)*

Virtual

### Progress on understanding the formation of the Magellanic Stream

Galactic Dynamics Group Meeting

*Seminar (2019)*

CCA, Flat Iron Institute, New York

### New models of the origin of the Leading Arm and the Magellanic Stream

A synoptic view of the Magellanic Clouds: VMC, Gaia and beyond

*Conference Talk (2019)*

ESO, Garching, Germany

### The Quantum Nature of Self-Dual Yang-Mills Theory

University of Edinburgh Department of Physics

*Masters Dissertation Seminar (2017)*

Edinburgh, UK

### A Preliminary Study of Active Region Canopies with AIA

221<sup>st</sup> American Astronomical Society Meeting

*Poster Presentation (2013)*

Long Beach, CA

## AWARDED GRANTS AND FELLOWSHIPS

### NASA Wisconsin Space Grant Consortium Research Fellowship

*April 6, 2021*

- Received funding for my work "The Magellanic Corona: A Case Study in Properties of the Circumgalactic Medium"

### 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 \$276,000

### NASA Wisconsin Space Grant Consortium Research Fellowship

*April 24, 2020*

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

# RESEARCH AND PROFESSIONAL EXPERIENCE

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## **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*

- Worked as a teaching assistant for undergraduate dynamics and E&M courses, leading workshop discussions and labs
- Graded 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 in quantum field theory
- 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

*Teaching Intern*

*August 2010 - December 2012*

- Led labs and workshop sessions and graded coursework and exams for a variety of courses

## **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

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## **UW Madison Karl Guthe Jansky and Alice Knapp Jansky Scholarship**

*July 26, 2021*

## **UW Madison Stebbins Award**

*December 9, 2020*

- Honors a significant research achievement and an exceptional research initiative

## **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