

# Peter J. Smith

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## Education

### MSc Astronomy

SAINT MARY'S UNIVERSITY

- Thesis Title: Dynamical Inference of Black Hole Populations in Globular Clusters
- Thesis Supervisor: Dr. Vincent Hénault-Brunet

2022-2024 (expected)

Halifax, NS, Canada

### BSc Honours in Astrophysics

SAINT MARY'S UNIVERSITY

- Thesis Title: The Effects of Binary Stars on Recovered Remnant Populations in Globular Clusters
- Thesis Supervisor: Dr. Vincent Hénault-Brunet
- Faculty of Science Dean's List: 2019, 2020, 2021, 2022

2018 - 2022

Halifax, NS, Canada

## Research

### Masters Thesis

SAINT MARY'S UNIVERSITY

- Supervisor: Dr. Vincent Hénault-Brunet
- Began the computation of a grid of dynamical models of globular clusters with a bottom-light IMF.
- Extracted mock data from a large grid of pre-computed dynamical models.
- Developed a method to test dynamically-inferred remnant populations on mock data.
- Developed and applied a method to used pulsar timing data to constrain dynamical models of globular clusters.

Sep. 2022 - Present

Halifax, NS, Canada

### Honours Thesis

SAINT MARY'S UNIVERSITY

- Supervisor: Dr. Vincent Hénault-Brunet
- Developed a method to include the dynamical effects of binary stars in equilibrium models of globular clusters.
- Tested the effects of binary stars on recovered remnant populations in globular clusters.

Sept. 2021 - Apr. 2022

Halifax, NS, Canada

### Undergraduate Research Assistant

SAINT MARY'S UNIVERSITY

- Supervisor: Dr. Vincent Hénault-Brunet
- Developed a method to include pulsar timing data in the fitting of multimass equilibrium models to globular clusters.
- Updated our existing stellar population synthesis code to use the latest prescriptions for black hole natal-kicks and ejections.
- Obtained strong constraints on the dark remnant population in 47 Tuc which represent a significant improvement over previous works.

Jan. 2020 - Sep. 2021

Halifax, NS, Canada

## Publications

### Combining pulsar timing and multimass models to probe the black hole content of the globular clusters 47 Tuc and Ter 5

P. J. SMITH, V. HÉNAULT-BRUNET, N. DICKSON, M. GIELES, H. BAUMGARDT

Submitted to AAS Journals

### Multimass modelling of Milky Way globular clusters - II. present-day black hole populations

N. DICKSON, P.J. SMITH, V. HÉNAULT-BRUNET, M. GIELES, H. BAUMGARDT

MNRAS

Mar. 2024

### Multimass modelling of Milky Way globular clusters - I. Implications on their stellar initial mass function above $1 M_{\odot}$

N. DICKSON, V. HÉNAULT-BRUNET, H. BAUMGARDT, M. GIELES, P.J. SMITH

MNRAS

Jul. 2023

## Teaching

### Teaching Assistant

SAINT MARY'S UNIVERSITY

- Courses: Math Methods I, Quantum Mechanics I, University Physics II, Introduction to Astronomy, Life in the Universe
- Duties include marking and managing tests and assignments, assisting with in-class demonstrations and assisting individual students during lectures.

Halifax, NS

Sep. 2022 - Present

## Outreach and Volunteer Activities

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### Observatory Tour Volunteer

BURKE-GAFFNEY OBSERVATORY

- Assist with public tours and open-houses at the Burke-Gaffney Observatory.
- Answer questions from the tour participants and operate small telescopes on the observing deck.

*Saint Mary's University*

*2022 - Present*

### Volunteer Judge

SMU DEPARTMENT OF ASTRONOMY AND PHYSICS ANNUAL MINI-SYMPOSIUM ON UNDERGRADUATE SUMMER RESEARCH

- Evaluate student presentations and select a winner and runner-up.

*Saint Mary's University*

*Sep. 2023*

## Talks and Presentations

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### Globular Clusters and Their Tidal Tails: From the Milky Way to the Local Group

ORAL PRESENTATION

*May 2024*

*University of Toronto*

### Institute for Computational Astrophysics Symposium

ORAL PRESENTATION

*Feb. 2024*

*Saint Mary's University*

### MODEST-23

POSTER PRESENTATION

*Aug. 2023*

*Northwestern University*

### Eastern Association for Stellar Astrophysics

ORAL PRESENTATION

*Oct. 2022*

*Virtual*

### Atlantic Undergraduate Physics and Astronomy Conference

ORAL PRESENTATION

*Feb. 2022*

*Université de Moncton (Virtual)*

### Canadian Undergraduate Physics Conference

ORAL PRESENTATION

*Nov. 2021*

*Ryerson University (Virtual)*

### SMU Department of Astronomy and Physics Annual Mini-Symposium on Undergraduate Summer Research

ORAL PRESENTATION

*Sep. 2021*

*Saint Mary's University (Virtual)*

### Canadian Astronomical Society AGM 2021

POSTER PRESENTATION

*May 2021*

*Dominion Radio Observatory (Virtual)*

### Atlantic Undergraduate Physics and Astronomy Conference

ORAL PRESENTATION

*Feb. 2021*

*Dalhousie University (Virtual)*

### SMU Department of Astronomy and Physics Annual Mini-Symposium on Undergraduate Summer Research

ORAL PRESENTATION

*Sep. 2020*

*Saint Mary's University (Virtual)*

## Honours & Awards

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2022 **Tindall/Steinitz Award in Research**, Atlantic Universities Physics and Astronomy Conference

*Université de  
Moncton*

2021 **Science Atlantic Communication Award**, Atlantic Universities Physics and Astronomy Conference

*Dalhousie  
University*

2020 **1st Place Award**, Saint Mary's University Department of Astronomy and Physics Annual Mini-Symposium on Undergraduate Summer Research

*Saint Mary's  
University*