SELIM KALICI

SUNY University at Oswego

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Education

Yale University   *Beginning Fall 2024*
Ph.D. Astronomy

SUNY University at Oswego   *May 2024*
B.A Mathematics, **B.Sc** Physics

Research Experience

JANUARY - MAY 2024
NASA Goddard Space Flight Center, Supervised by Dr. Jie Gong:

- Modeling and analysis of gravity waves in Earth's atmosphere and the evolution of their properties during a solar eclipse.

- Ray-tracing gravity wave evolutionary paths through Earth.

JUNE - AUGUST 2023
Italian National Institute of Astrophysics, Capodimonte Observatory, Supervised by Dr. Anupam Bhardwaj:

- Modeling Ultra Long Period Cepheid stars in the Magellanic Clouds

- Estimating the maximum L/M ratio of convergent variable stars in hydrodynamic simulations using a combination of observations and theoretical modeling.

JUNE - AUGUST 2022
Max Planck Institute for Astrophysics, Supervised by Dr. Earl P. Bellinger:

- Developed machine learning methods for predicting the physical parameters of observed stars from observables.

- Investigated the modelling of variable stars from theories of stellar pulsation and convection.

SPRING 2021 - PRESENT
SUNY University at Oswego, Supervised by Dr. Shashi M. Kanbur:

- Using state-of-the-art software to calculate the growth and development of stars over time.

- Fitting and analyzing light curves of theoretical and observed stars with several methods.

Publications

1. **A multi-phase study of theoretical and observed light curves of classical Cepheids in the Magellanic Clouds.**
   Kerdaris Kurbah, Sukanta Deb, Shashi M. Kanbur, Susmita Das, Mami Deka, Anupam Bhardwaj, Hugh Riley Randall, **Selim Kalici**. (2023)
   Monthly Notices of the Royal Astronomical Society, Accepted

2. **Bridging theory and observation in stellar pulsation models: The impact of convection on instability strip boundaries for Classical and Type-II Cepheids.**
Mami Deka, Earl P. Bellinger, Sukanta Deb, Shashi M. Kanbur, Hugh Riley Randall, **Selim Kalici**, Susmita Das, Anupam Bhardwaj. (2024)
Monthly Notices of the Royal Astronomical Society, Accepted.

3. **Beyond the Period-Luminosity relation: Deep Learning Estimate of Stellar Parameters for RR Lyrae in Messier 3.**
Selim Kalici, Susmita Das, Anupam Bhardwaj, Hugh Riley Randall, Earl P. Bellinger, Shashi M. Kanbur.
(In Prep.)

Talks & Presentations

2023   A Derivation of The Oppenheimer-Volkoff Equation.
QUEST, SUNY University At Oswego. *Oswego, New York*

2023   Simplicial Homology in Physics.
QUEST, SUNY University At Oswego. *Oswego, New York*

2022   Estimating stellar parameters of RR Lyrae variables with deep learning.
Max Planck Institute of Astrophysics. *Garching, Germany*

2022   Applying machine learning to stellar lightcurves.
QUEST, SUNY University At Oswego. *Oswego, New York*

2021   Machine Learning Applications to Stellar Astrophysics.
Rochester Academy of Science Fall Scientific Paper Session. *Rochester, New York*

2021   Machine learning estimate for distance modulus to Messier 3.
RISE Summer Scholar Symposium. Oswego, New York

Awards & Grants

- Louis R. DeRitter Mathematics Department Award
  Awarded to a student for their performance in upper-division Mathematics courses

- Outstanding Physics Major
  An outstanding physics major!

- Sigma Xi Honors Society Physics & Astronomy QUEST Award
  Awarded to research talks given at QUEST

- RISE academic research grant

- SCAC research grant

Relevant Work Experience

2022 - Present
CRLA certified Mathematics, Physics, Astronomy & Computer Science Tutor
Office of Learning Services, SUNY College at Oswego

- Over 200 hours of peer tutoring including one-on-one appointments and leading large review sessions before finals.

- Tutoring students in a range of subjects varying including calculus, differential equations, as well as complex & real analysis.

- Earned CLRA certification through the tutor training program.