# David A. Simon

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## EDUCATION

University of Oxford, Wolfson College — Expected June 2025

- DPhil in Astrophysics

University of Oxford, Pembroke College — June 2021

- MSc in Mathematical and Theoretical Physics

Boston University — May 2020

- B.A. in Physics *with honors* and Mathematics

## EXPERIENCE

Measuring the Supermassive Black Hole in M87 — October 2021 - Present

- Determined the mass of the supermassive black hole in M87 to be 25% larger than previously believed
- Pioneered a new technique to measure the stellar density of galaxies revealing a discrepancy with previous assumptions of a factor of 2
- Developed new modeling techniques allowing for realistic dynamical modeling of galaxy kinematics

Scalar Fields as Dark Matter and Dark Energy — May 2018 - May 2020

- Developed a mathematical model of dark matter and dark energy to explain astrophysical observations that outperformed the standard cosmological model
- Cross-checked the validity of the model using large astrophysical data sets

SNO+ Long Term Test Tank (LT3) for Liquid Scintillator — April 2017 - August 2018

- Designed and assembled the tank and plumbing for LT3 that is now used by the SNO+ experiment
- Set up detectors and wrote code to automate temperature and humidity measurements of LT3
- Led a team that created a website for the remote monitoring of the experiment
- Automated the analysis and identification of radioactive isotopes in materials saving $\sim$3 hours of time per sample studied

## LEADERSHIP

Undergraduate Learning Assistant, *Boston University* — September 2018 - May 2020

- Ran weekly discussion sections with a graduate teaching fellow for 5 undergraduate physics courses
- Wrote weekly discussion worksheets used by $\sim$40 students
- Hosted weekly office hours and end of term review sessions
- Conducted and evaluated interviews with learning assistant applicants.

Peer Mentoring, *Boston University* — September 2018 - May 2020

- Mentored 7 physics and mathematics undergraduate students
- Helped students create short and long term goals and implement plans to achieve them
- Evaluated academic progress and identified new habits and resources that improved performance

## SKILLS

Technical

- Experienced using MS Excel, MS Powerpoint, Python, Mathematica, C, Fortran 90, LaTeX
- Experience using the BU Shared Computing Cluster and Oxford Astrophysics Computing Cluster