Joseph M. Fedrow
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Citizenship: USA

Beyond Center for Fundamental Concepts in Science
Arizona State University
Tempe, AZ

Education

- **Yukawa Institute for Theoretical Physics** — Kyoto, Japan
  PhD., Theoretical Physics — *March 2018*
  - Thesis: Simulating Extreme Spacetimes on the Computer
  - Research: Gravitational Waves, Numerical Relativity, Black Holes, HPC Data Visualization
- **San Diego State University** — San Diego, CA
  M.Sc., Astronomy — *May 2013*
  - Thesis: On Beyond Λ: Standard Single Field Quintessence Solutions for the Dark Energy Problem
- **The Evergreen State College** — Olympia, WA
  B.Sc., Applied Mathematics — *June 2006*
  - Is the Acceleration of Our Universe Symmetrical?

Research Experience

- **Beyond Center for Fundamental Concepts in Science** — Tempe, AZ
  Postdoc/Assistant Research Scientist — *April 2024 - Present*
  - Ancient Metabolism, Bioinformatics, and Supercomputing *What is Life?*
- **KAGRA Kamioka Gravitational Wave Detector** — Japan
  Collaboration Member — *February 2016 - April 2019*
  - Binary black hole numerical waveforms and member of the Diversity Committee
- **Center for Astrophysics and Space Sciences, UCSD** — San Diego, CA
  Visiting Scholar — *June 2013 - March 2016*
  - Theoretical cosmology: inflation, dark energy, and CMB birefringence
- **Kavli Institute for the Physics and Mathematics of the Universe** — Tokyo, Japan
  Visiting Scientist — *July 2014*
  - Chaotic inflation
- **University of California, San Diego** — San Diego, CA
  Graduate Student Under Professor Kim Griest — *Dec. 2011 - May 2013*
  - Scalar field modeling of dynamical dark energy
- **Mount Laguna Observatory** — San Diego, CA
  40-Inch Reflecting Telescope Operator — *Apr. 2012 - Dec. 2012*
  - Primary observational astronomer for a supernova survey project
- **Electro-Acoustic Research** — Venice Beach, CA
  Analog Electronics Apprentice — *Feb. 2009 - May 2009*
  - Soldering and assembly of analog synthesizers
- **San Francisco State University Exoplanet Group** — San Francisco, CA
  Graduate Research Assistant — *Sept. 2007 - May. 2008*
  - Numerical spectral synthesis modeling of M-stars for exoplanet detection
- **Maria Mitchell Observatory** — Nantucket, MA
  NSF REU Student — *May 2005 - Aug. 2005*
  - Spectral analysis of the post final helium shell flash evolution of V605 Aql

Selected Presentations:

"Gravitational Waves from Binary Black Hole Mergers Inside of Stars"
International Center for Interdisciplinary Science and Education
Quy Nhon, Vietnam, August 2017

"Kintsugi: The Art of Broken Symmetry Across Space and Time"
City University of New York, Lehman College
The Bronx, New York, July 2017

"Binary Black Holes for Biologists"
Simons Center for Quantitative Biology, Cold Spring Harbor Laboratory
Long Island, New York, July 2017

"Exploring Creative Connections between Dark Energy, Gravitational Waves, and Education"
Transdisciplinary Workshop on Advanced Future Studies
Kyoto, Japan, February 2017

"Binary Black Holes Inside of Stars and Gravitational Waves Inside the Classroom"
San Diego State University
San Diego, California, October 2016

"Gravitational Waves from Binary Black Holes with Gas"
Hanoi International Workshop "Gravitation and the Universe"
Hanoi, Vietnam, October 2016

"Gravitational Waves from 3D Rotating Core-Collapse Supernovae"
21st International Conference on General Relativity and Gravitation
Columbia University, New York City, July 2016

"Black Holes for All! Observing Gravitational Waves in the Classroom"
International Society for Education Workshop
Kyoto, Japan, September 2016

"Binary Black Hole Simulations Involving Gas and Students"
Workshop on Relativistic Cosmology, Asian Pacific Center for Theoretical Physics
Pohang, South Korea, May 2016

"What is the Ultimate Fate of the Universe?"
International Workshop on Advanced Future Studies
Kyoto, Japan, March 2016

Teaching Experience

- **Cuyamaca College** — San Diego, CA
  Adjunct Professor of Physics and Astronomy — *Jan. 2021 - Present*
- **Kyoto International School** — Kyoto, Japan
  Cosmology for Kids! Lecture Series — *Winter/Spring 2018*
- **Yukawa Institute for Theoretical Physics, Kyoto University** — Kyoto, Japan
  Co-taught the weekly class Python for Scientific Programming — *May 2017 - June 2017*
- **Kyoto University** — Kyoto, Japan
  Teaching assistant for the seminar class ***What is Life?*** — *April 2016 - June 2016*
- **Palomar College** — San Marcos, CA
  Adjunct Professor of Physics and Astronomy — *Aug. 2013 - Dec. 2014*

- **San Diego State University** — San Diego, CA
  Astronomy Lab Instructor and Lead TA (Spring 2013) — *Aug. 2011 - May 2013*
- **Noshiro Board of Education** — Noshiro, Japan
  Assistant Language Teacher — *July 2009 - July 2011*
- **San Francisco State University** — San Francisco, CA
  Astronomy Laboratory Instructor — *Aug. 2006 - Dec. 2008*
- **The Evergreen State College** — Olympia, WA
  Calculus TA / Quantitative and Symbolic Reasoning Tutor — *Sept. 2004 - June 2006*

Publications: Refereed Journals

"The Progenitor Dependence of Three-Dimensional Core-Collapse Supernovae"
The Astrophysical Journal Letters, Volume 855, Issue 1 (2018)
Christian Ott et al. including Joseph M. Fedrow

"Gravitational Waves from Binary Black Hole Mergers Inside of Stars"
Physical Review Letters 119, 171103 (2017)
Joseph M. Fedrow et al.

"Type II supernova energetics and comparison of light curves to shock-cooling models"
The Astrophysical Journal 820.1 (2016): 33
Adam Rubin et al. including Joseph M. Fedrow

"Reverberation mapping of the Kepler field AGN KA1858+ 4850"
The Astrophysical Journal 795.1 (2014): 38
Liuyi Pei et al. including Joseph M. Fedrow

"Anti-Anthropic Solutions to the Cosmic Coincidence Problem"
Journal of Cosmology and Astroparticle Physics 2014.01 (2014): 004
Joseph M. Fedrow and Kim Griest

"V605 Aquilae: The Older Twin of Sakurai's Object"
The Astrophysical Journal Letters 646.1 (2006): L69
Geoffrey C. Clayton et al. including Joseph M. Fedrow

Awards

Japanese Government (MEXT) Scholarship Recipient	2015-2018
San Diego State University Awona Harrington Astronomy Scholarship	2012
The Japan Exchange and Teaching (JET) Program Recipient	2009 - 2011
San Francisco State University Graduate Teaching Associate Fellowship	2006-2008
National Science Foundation REU Scholarship Recipient	2005
1st place Best Student Research Poster, American Physical Society NW meeting	2004
Scholastic Achievement Award at The Evergreen State College	2003
Dean's Scholarship at The University of New Hampshire	2002

Skills

Languages: English (Native), Japanese (Functional Fluency)

Computer Languages: Python, C++, Fortran 77/90, VisIt, IDL, Mathematica, SM, MATLAB, IRAF, LaTeX