

Brandon K. Wiggins

Curriculum Vitae

Assistant Professor of Physics, Southern Utah University
 Guest Scientist CCS-2, Center for Theoretical Astrophysics, Los Alamos National Laboratory

Contact Information

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Positions:

Assistant Professor of Physics, Southern Utah University	2016—present
LANL Faculty Guest Scientist, CCS-2	2016—present
LANL Graduate Research Assistant	2015 – 2016
LANL Research Assistant	Summer 2014
LANL Fellowship Research Student	Summer 2013
BYU HIDRA Graduate Research Fellow	2012 - 2015

Selected Awards and Honors:

SC18 Scientific Visualization and Data Analytics Showcase Best Visualization Award Finalist (top 6 worldwide)	Sep 2018
Lt. Gov. of Utah Award for Volunteer Services in Science Outreach	Feb 2018
Southern Utah University's Outstanding Educator (top university award)	2016-2017
Outstanding Faculty Member in Physical Science, SUU	2016-2017
Excellence in Teaching Award, National Society of Leadership and Success	April 2017
Outstanding Paper Award in Physical Sciences, Journal of the Utah Academy	Dec 2016
Awarded 2.0 million CPU hours on LANL of Institutional Computing time to model quasar emission and compact object mergers	2015 - 2016
Outstanding Paper Award in Physical Sciences, Journal of the Utah Academy	Dec 2014
Inaugural TEDxLANL speaker: "The Biggest Explosions in the Universe"	July 2011
High Impact Doctoral Award (HIDRA) Fellowship, Brigham Young University Graduate Studies	2012-2015

Publication in Refereed Journals:

The Location and Environments of Neutron Star Mergers in an Evolving Universe

Brandon K. Wiggins, Chris L. Fryer, Joseph Smidt et al. 2018, *Astrophysical Journal* (accepted)

The Role of Dredge-Up in Double White Dwarf Mergers

J. Staff, B. K. Wiggins, D. Marcelllo et al. 2018, *Astrophysical Journal* (accepted)

Smoothed Particle Hydrodynamics Simulations of Protoplanetary Collisions

B. K. Wiggins, M. Taylor. 2018, *Journal of the Utah Academy*, 94, 347

The Supernova Analysis Application (SNAP)

A. Bayless, C. Fryer, R. Wollaeger, B. K. Wiggins, W. Even et al. 2017, *Astronomy and Astrophysics*, 846,101

Lyman-alpha Emission from Infant Supermassive Black Holes in the Early Universe

Brandon K. Wiggins, Joseph M. Smidt, Jarrett L. Johnson, 2017, *Journal of the Utah Academy of Sciences Arts and Letters* (accepted)

Ab Initio Cosmological Simulations of CR7 as an Active Black Hole

Joseph Smidt, B. K. Wiggins, Jarrett L. Johnson, 2016, *Astrophysical Journal Letters*, 829, L6

Extreme Supernova Models for the Super-luminous Transient ASASSN-15lh

E Chatzopoulos, J. C. Wheeler, J Vinko, A. Nagy, B. K. Wiggins, W. P Even, 2016, *Astrophysical Journal*, 829, 94

Assessing the Hydroxyl-Water Megamaser Connection. I. Water Emission in Hydroxyl Hosts

B K Wiggins et al. 2016. *Astrophysical Journal*, 816, 55

VLBA Survey of OH Masers in Star-forming Regions II: Satellite Lines

A. E. Ruiz-Velasco, Derrek Felli, Victor Migenes and B K Wiggins, 2016, *Astrophysical Journal*, 822, 101

Finding the First Cosmic Explosions: IV. 85 -140 Solar Mass Pair Instability Supernovae

Joseph Smidt, Daniel Whalen, E. Chatzopoulos, B K Wiggins, Ke-Jung Chen, Alexandra Kozyreva, Wesley Even. 2015, *Astrophysical Journal*, 805, 44

Population III Hypernovae

Joseph Smidt, Daniel Whalen, Wesley Even, B K Wiggins, Jarrett Johnson, Chris L. Fryer. 2014, *Astrophysical Journal*, 797, 97

Emission from Pair-Instability Supernovae with Rotation

E Chatzopoulos, Dan Van Rossum, John Wheeler, Daniel Whalen, Joseph Smidt, B K Wiggins. 2014, *Astrophysical Journal*, 799, 18

Assessing the Observability of Pair-Instability Supernovae and Hypernovae in the Early Universe

B K Wiggins, Joseph Smidt, Daniel Whalen, Wesley Even, Victor Migenes, Chris L. Fryer, 2015. *Journal of the Utah Academy of Sciences Arts and Letters*, 91, 167

Telescope Observing Proposals:*The Supermassive Black Hole in II Zw 96*

Granted 2.5 hours on the Very Large Array (VLA)

May 2017

Water Emission Toward OH Megamaser Hosts (GBT14A-381)

Granted 60 hours on the Green Bank Telescope

Feb 2014

Books:*Physics By Hand-Holding, 1e*

B K Wiggins, 2018, Lulu Press, ISBN 978-0359038305

Aug 2018

Of Warpings in Space and Time

B K Wiggins. 2006. Lulu Press, North Carolina.

Apr 2006

Invited Talks:*Smoothed Particle Hydrodynamics Simulations of Dredge-up in Double White Dwarf Mergers*

ICRANet: Supernovae, Hypernovae, Binary-Driven Hypernovae, Pascara, Italy

June 23, 2016

The Biggest Explosions in the Universe

TEDxLANL, inaugural speaker

July 31, 2014

Talks:

Mushroom Clouds and Supernovae: The Imprint of Nuclear Physics In Science
Invited RAD Lecture, Southern Utah University, Nov 26, 2017

SUU SPARC Recognition Lecture, Invited Speaker
Delivered at SUU, Nov 30, 2017

Smoothed Particle Hydrodynamics Simulations of Double White Dwarf Mergers
Conference of the Utah Academy, Orem UT April. 7, 2017

Neutron Star Mergers in the Evolving Universe
8th Huntsville Gamma Ray-Burst Symposium, Huntsville AL Oct 28, 2016

An Introduction to String Theory
SUU Math Seminar Series (6 lectures) Fall 2016

Smoothed Particle Hydrodynamics: a Crash Course
Lecture Series of the Los Alamos Co-Design Workshop on Neutron Star Mergers June 9, 2016

The Final Resting Places of Double Neutron Star Mergers in the Cosmic Web
High Energy Astrophysics Division National Meeting, AAS Apr 4, 2016

Emission from Black Holes in the Early Universe
Conference of the Utah Academy, West Minster College Mar 10, 2016

A Survey for Dual Megamasers: Statistics and Trends
New Mexico NRAO Symposium Nov 4, 2015

Assessing the Water-Hydroxyl Connection
American Physical Society 4-Corners Sectional Conference, Best Talk Award Oct 18, 2014

Modeling Ancient Supernovae and the Births of Supermassive Black Holes
Invited SUU Math Seminar Oct 14, 2014

An Implementation of Self-Gravity in RAGE
LA-Astro Series Seminar July 30, 2014

Modeling Ancient and Modern Supernovae
BYU AstroGroup Seminar Sep 25, 2014

Discovery of a Supermassive Black Hole in II Zw 96
BYU Student Research Conference, Best Talk Award Mar 15, 2014

The JVLA Deep Sky Survey: Finding the First Cosmic Explosions
New Mexico NRAO Symposium Jan 17, 2014

Finding the First Cosmic Explosions
National American Astronomical Society Meeting Jan 6, 2014

Finding the First Cosmic Explosions: Pair Instability Supernovae and Hypernovae
American Physical Society 4-Corners Sectional Conference Oct 17, 2013

Improving 3-temperature plasma controls in Los Alamos code RAGE
Los Alamos Computational Workshop Seminar Aug 8, 2013

Disks of Fire and Water: On the Coexistence of OH and Water Megamasers
 American Physical Society 4-Corners Sectional Conference Oct 27, 2012

Undergraduate Students Mentored in Research:

All students below presented research at a symposium at LANL, SUU or another venue.

- Morgan Taylor (SUU), Comp Phys Summer Workshop at LANL Spring/Summer 2017
- Alex Gigliona (Virginia Tech), Comp. Phys Summer Workshop Summer 2017
- William Black (BYU), comentored with Joe Smidt at LANL Summer 2017
- Kyle Christiansen & Payton Christensen (SUU), black hole accretion disk geometry Spring 2017, Spring 2018
- Hubert Dayish (SUU), turbulence in aneurisms, Spring 2018
- Tanner Gamble (SUU), asteroid impacts, Spring 2018
- Austin Martinez (SUU), modeling an acute supraspinatus tear with strength/failure, Spring 2018
- Dillon Maughan, Allie Maughan & Kendal Maughan (SUU) Monte Carlo simulations, drone footage and parking problems at SUU.
- Skyler Porcaro (SUU), asteroid impacts, Spring 2017
- Agueda Rodriguez (SUU), turbulence in blood flow, Spring 2017

Service:

- Heads extensive science community outreach initiative at SUU (20+ school assemblies/community events during 2017-2018 academic year)
- Referee for Astrophysical Journal (flagship astrophysics journal) 2017
- Referee for Journal of Utah Academy 2017, 2018
- External Thesis Reviewer, Sapienza University of Rome and ICRANet, “Accretion in Compact Stars: Hypercritical accretion in the Induced Gravitational Collapse and the Post-Merger Evolution of White Dwarf Mergers”, Laura Marcela Becerra Bayona and Dr. Jorge Rueda
- Session Chair, Conference of the Utah Academy 2017, 2018
- Webpage designer, LANL Center for Theoretical Astrophysics 2016
- (ccsweb.lanl.gov/astro/)
- Session Chair, NRAO New Mexico Symposium 2015
- Main Title Computer Graphics Designer, Back up the Mountain (an SUU film) 2015
- BYU Planetarium Show Writer, Presenter 2014
- Exam writer and judge, Regional Science Olympiad 2010-2013
- Co-organizer of Big Bang Night of Chemistry at SUU 2011, 2017

Memberships:

American Astronomical Society
 Utah Academy of Sciences, Arts and Letters

Hobbies:

Orchestral music composition (with Finale)
 Hiking/distance running (Cedar City Half Marathon 2014)