Jamie Alexander Powell Law-Smith

Department of Astronomy & Astrophysics
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Citizenship: Canada, UK, US permanent resident

EDUCATION

University of California Santa Cruz, Ph.D. in Astronomy & Astrophysics, 2015-2021 (expected)
Harvard University, A.B. cum laude with honors in Physics, Astrophysics (double), 2010-2014

POSITIONS HELD

Harvard ITC Fellow, Harvard-Smithsonian Center for Astrophysics, starting Sept 2021
PhD student, University of California Santa Cruz, 2015-2021 (expected)

RESEARCH INTERESTS

Black holes, tidal disruption events, common envelope evolution, gravitational wave sources,
extragalactic astronomy, active galactic nuclei, vacuum decay, de Sitter space in string theory

AWARDS

Harvard ITC Fellowship (5-yr), 2021
IAS Membership, 2021, *declined*
AAS Doxsey Prize, 2021
Elmer A. Fridley Scholarship in the Physical Sciences (UC Santa Cruz), 2020
Regents' Fellowship (UC Santa Cruz), 2019
Whitford Prize for highest achievement in research, coursework, and preliminary exam (UCSC), 2017
NR Tuition Fellowship (UC Santa Cruz), 2015
Leo Goldberg Award for outstanding Junior thesis in Astronomy (Harvard University), 2013
David Rockefeller International Experience Grant, 2012
Harvard College Research Program Fellowship (Harvard University), 2012

GRANTS

Collaborator, NSF, "Multiple Approaches to Multiple-Messenger Astronomy", $688K, 2019-2022

Collaborator, NSF MRI, "Acquisition of a High Performance Computer for Computational Science at UC Santa Cruz", $1.547 million, 2018-2021

Co-I, NASA HEC supercomputing allocation, "Modeling of Panchromatic Tidal Disruption Flares", 400K SBUs, 2018

Co-I, NASA ATP TCAN, "Modeling of Panchromatic Transients", $397K, 2014-2018

Collaborator, NSF, "Tidal Disruption of Stars in Galaxy Centers: Connecting Models to Observations", $264K, 2016-2019

Co-I, NASA HEC supercomputing allocation, "Modeling of Panchromatic Tidal Disruption Flares", 213K SBUs, 2017

Co-I, NASA HEC supercomputing allocation, "Modeling of Panchromatic Tidal Disruption Flares", 102K SBUs, 2016

PUBLICATIONS

✱ indicates alphabetical authorship order. † indicates advised student. Up-to-date list available on ADS.

1. ✱ Dine, M., **Law-Smith, J. A. P.**, Sun, S., Wood, D., & Yu, Y., 2021, "Obstacles to Constructing de Sitter Space in String Theory," JHEP, 02, 050 [arXiv/hep-th:2008.12399]

2. Jones, D. O., Foley, R. J., et al., incl. **Law-Smith, J. A. P.**, 2021, "The Young Supernova Experiment: Survey Goals, Overview, and Operations," ApJ, 908, 143 [arXiv/astro-ph:2010.09724]

3. † Dodd, S. A., **Law-Smith, J. A. P.**, Auchettl, K., Ramirez-Ruiz, E. & Foley, R. J., 2021, "The Landscape of Galaxies Harboring Changing-Look Active Galactic Nuclei in the Local Universe," ApJL, 907, L21 [arXiv/astro-ph:2010.10527]

4. Rossi, E. M., Stone, N. C., **Law-Smith, J. A. P.**, MacLeod, M., Lodato, G., Dai, J. L., & Mandel, I., 2021, "The Process of Stellar Tidal Disruption by Supermassive Black Holes. The first pericenter passage," Space Sci Rev 217, 40 [arXiv/astro-ph:2005.12528]

5. **Law-Smith, J. A. P.**, Coulter, D. A., Guillochon, J., Mockler, M., & Ramirez-Ruiz, E., 2020, "Stellar Tidal Disruption Events with Abundances and Realistic Structures (STARS): Library of Fallback Rates," ApJ, 905, 141 [arXiv/astro-ph:2007.10996]

6. **Law-Smith, J. A. P.**, Everson, R. W., Ramirez-Ruiz, E., de Mink, S. E., et al., 2020, "Successful Common Envelope Ejection and Binary Neutron Star Formation in 3D Hydrodynamics," submitted to ApJ [arXiv/astro-ph:2011.06630]

7. Hung, T., Foley, R. J., et al., incl. **Law-Smith, J. A. P.**, 2020, "Double-peaked Balmer Emission Indicating Prompt Accretion Disk Formation in an X-Ray Faint Tidal Disruption Event," ApJ, 903, 31 [arXiv/astro-ph:2003.09427]

8. **Law-Smith, J. A. P.**, Coulter, D. A., & Mockler, B., 2020, "jamielaw-smith/STARS_library", v1.0.5, Zenodo, doi:10.5281/zenodo.4062018

9. French, K. D., Wevers, T., **Law-Smith, J. A. P.**, Graur, O., & Zabludoff, A. I., 2020, "The Host Galaxies of Tidal Disruption Events," Space Sci Rev 216, 32 [arXiv/astro-ph:2003.02863]

10. **Law-Smith, J. A. P.**, Guillochon, J., & Ramirez-Ruiz, E., 2019, "The Tidal Disruption of Sun-like Stars by Massive Black Holes," ApJL, 882, L25 [arXiv/astro-ph:1907.04859]

11. † Gallegos-Garcia, M., **Law-Smith, J. A. P.**, & Ramirez-Ruiz, E., 2018, "Tidal Disruptions of Main-sequence Stars of Varying Mass and Age: Inferences from the Composition of the Fallback Material," ApJ, 857, 109 [arXiv/astro-ph:1801.03497]

12. **Law-Smith, J. A. P.**, Ramirez-Ruiz, E., Ellison, S. L., & Foley, R. J., 2017, "Tidal Disruption Event Host Galaxies in the Context of the Local Galaxy Population," ApJ, 850, 22 [arXiv/astro-ph:1707.01559]

13. **Law-Smith, J. A. P.**, MacLeod, M., Guillochon, J., Macias, P., & Ramirez-Ruiz, E., 2017, "Low-mass White Dwarfs with Hydrogen Envelopes as a Missing Link in the Tidal Disruption Menu," ApJ, 841, 132 [arXiv/astro-ph:1701.08162]

14. **Law-Smith, J. A. P.** & Eisenstein, D. J., 2017, "The Color and Stellar Mass Dependence of Small-Scale Galaxy Clustering in SDSS-III BOSS," ApJ, 836, 87 [arXiv/astro-ph:1702.03933]

TALKS

✱ indicates invited/review/plenary.

✱UT Austin Colloquium, Department of Astronomy, UT Austin, 2021
237th Annual Meeting of the AAS, Virtual, 2021
✱SFSU Colloquium, Department of Physics and Astronomy, San Francisco State University, 2020
✱Caltech TAPIR Seminar, Caltech, Pasadena, CA, 2020
✱Harvard CfA Galaxies & Cosmology and Stars & Planets Seminar, Cambridge, MA, 2020
✱MIT Brown Bag Lunch, MIT, Cambridge, MA, 2020
✱UC Berkeley "Explosive Astro", UC Berkeley, Berkeley, CA 2020
✱Harvard-Monash Meeting, Monash University, Australia, and Harvard University, USA, 2020
✱Princeton University, Quataert group meeting, Princeton, NJ, 2020
✱Northwestern CIERA Seminar, Northwestern University, Evanston, IL, 2020
✱DARK Cake Talk, DARK Cosmology Centre, Niels Bohr Institute, University of Copenhagen, 2020
Tidal Disruptions in Kyoto: Confronting Theory with Observations, Kyoto, Japan, 2020
✱Compact Objects for All Conference (review talk), Lund Observatory, Sweden, 2020
Dunlap Institute for Astronomy & Astrophysics, University of Toronto, Toronto, Canada, 2018
Using Tidal Disruption Events to Study Supermassive Black Holes, Aspen, CO, 2018
TDE17: Piercing the sphere of influence, Cambridge, UK, 2017
UC Santa Cruz FLASH Seminar, Santa Cruz, CA, 2017
UC Santa Cruz Transient Lunch, Santa Cruz, CA, 2017
Jerusalem Tidal Disruption Event Workshop, Jerusalem, Israel, 2015
Tidal Disruption Event Fest at UC Santa Cruz, Santa Cruz, CA, 2015

TEACHING

Astronomy 3, Introductory Astronomy: Planetary Systems, UCSC, Teaching Assistant, 2021
Astronomy 1, Introduction to the Cosmos, UCSC, Teaching Assistant, 2019
Astronomy 111, Order of Magnitude Astrophysics, UCSC. Taught half of lecture (~40 students), 2018
Astronomy 119, Introduction to Scientific Computing, UCSC, Teaching Assistant, 2018
Astronomy 111, Order of Magnitude Astrophysics, UCSC. Taught half of lecture (~25 students), 2016
Astronomy 111, Order of Magnitude Astrophysics, UCSC. Taught half of lecture (~25 students), 2015
Physics 15B Laboratory, Introductory Electromagnetism, Harvard University, Teaching Fellow, 2011

OUTREACH

Mentor, Lamat Summer Research Program, UCSC. Mentor for undergraduate research program aimed at underrepresented minorities. Helped students with research and posters that were presented at conferences, 2016.

Visiting Teacher, Taktse International School, Sikkim, India. Physics, Astronomy, and Computer Science teaching, curriculum design, and mentoring for K-12. Developed new Computer Science course and helped two mentees become first-generation college students at schools in the US, 2014.

STUDENTS ADVISED

Chang Liu, undergraduate (Peking University), 2020-present
Monica Gallegos-Garcia, undergraduate (UCSC); paper published; now PhD at Northwestern, 2015-2018
Priscilla Camacho Olachea, "post-bac" student (UCSC), 2016-2017

SKILLS

Programming languages: Python, C/C++, FORTRAN, Javascript, SQL, MATLAB, Mathematica
Codes: FLASH, MESA
High-performance computing: use of 10+ supercomputing facilities, incl. NASA Pleiades, >1e7 CPU-hrs.
Languages: English (native), French (fluent)

MEDA COVERAGE

EurekAlert AAAS, "New observations of black hole devouring a star reveal rapid disk formation", 2020
SciTechDaily, "Jaw Dropping Observations of Black Hole Devouring a Star Reveal Rapid Disk Formation", 2020
NSF Research News, "New observations of black hole devouring a star reveal rapid disk formation", 2020
IFLScience, "New Insights Into What Happens When A Black Hole Destroys A Star", 2020
Cosmoquest, "New Observations of Black Hole Devouring a Star Reveal Rapid Disk Formation", 2020
Science Examiner, "New Observations Of Black Hole Devouring A Star – First Solid Confirmation", 2020
Technology.org, "New observations of black hole devouring a star reveal rapid disk formation", 2020
Focus Technica, "Jaw Dropping Observations of Black Hole Devouring a Star Reveal Rapid Disk Formation", 2020
NewsBeezer, "New observations of black hole devouring a star reveal rapid disk formation", 2020
Archaeology News Network, "New Observations Of Black Hole Devouring A Star Reveal Rapid Disk Formation", 2020
Science Daily, "New observations of black hole devouring a star reveal rapid disk formation", 2020
Astrobites, "Double-Peak and Destroy: Accretion in a Tidal Disruption Event Reveals Itself", 2020
UCSC News Center, "New observations of black hole devouring a star reveal rapid disk formation", 2020
Cosmoquest, "Dual quasars; tidal disruption events; and a halo for Andromeda", 2020
AAS Nova, "When Black Holes Shred Sun-Like Stars", 2019
First hamburger sent into space (independent Harvard undergraduate project), 2014, covered by Jay Leno, Time Magazine, UK Daily Mail, Canadian Discovery Channel, Der Spiegel, Australian News, Village Voice, etc., >1 million views on YouTube