Adam S. Jermyn

Home: 18 Duxbury Lane, Longmeadow, MA 01106-2006, USA
Work: Center for Computational Astrophysics, Flatiron Institute, New York, NY 10010
Online: adamjermyn@gmail.com, adamjermyn.com, github.com/adamjermyn

Education

PhD, Astronomy, University of Cambridge, Churchill College, Institute of Astronomy — 2015-18
Dissertation: Turbulence and Transport in Stars and Planets (doi:10.17863/CAM.25347)
Funded by UK Marshall Scholarship
Supervisors: Christopher Tout and Gordon Ogilvie

BS, Physics, California Institute of Technology — 2011-15
Academic Advisors: Tom Tombrello and Jason Alicea
Senior Thesis: The Atmospheric Dynamics of Pulsar Companions (Sterl Phinney)

Research

Flatiron Research Fellow, Center for Computational Astrophysics — 2019-21
KITP Postdoctoral Scholar, UCSB — 2018-19

Awards

IAU PhD Prize in the Division of Stars and Stellar Physics — 2018

Institute of Astronomy Paul Murdin Prize (for best paper by a PhD student) — 2017
Awarded for the best paper by a PhD student at the Institute of Astronomy. "Jermyn's paper develops a new mechanism for the problem of swollen, hot Jupiter planets. The paper is particularly noteworthy for its development of analytic theory combining radiative insolation, tidal heating, and vibrational modes."

APS LeRoy Apker Award — 2015
For original contributions to understanding how the atmospheres of pulsar companions are heated and for elucidating the observational consequences.

Caltech George W. Housner Award for Original Research — 2015
Awarded to a senior selected for an outstanding piece of original scientific research.

Caltech Frederic W. Hinrichs, Jr. Memorial Leadership Award — 2015
Awarded to the seniors who, in the opinion of the undergraduate deans, have made the greatest undergraduate contribution to the welfare of the student body and whose qualities of leadership, character, and responsibility have been outstanding.

Caltech Dr. D. S. Kothari Prize — 2015
Awarded to a graduating senior in physics who has produced an outstanding research project during the year.

Caltech Library Senior Thesis Prize — 2015
For the thesis titled "The Atmospheric Dynamics of Pulsar Companions.", described by the prize committee as a "tour de force in its breadth of scholarship, creativity and significance".

Caltech Haren Lee Fisher Memorial Award in Physics — 2014
Awarded to a junior physics major who demonstrates the greatest promise of future contributions in physics.

Caltech Jack E. Froehlich Memorial Award — 2014
Awarded to a junior in the upper 5 percent of his or her class who shows outstanding promise for a creative professional career.

Caltech Perpall Scientific Speaking Competition 2nd Place — 2014
Awarded after a three-round competition of presentations following a Summer Undergraduate Research Fellowship.

US Physics Team (top 20 in US on semifinal exam) — 2011

First Place Massachusetts State Science Fair — 2010
Awarded for an N-body plasma simulation.

Grants

KITP Program "Probes of Transport in Stars" — 2021

Hertz Fellowship — 2015

NSF Graduate Fellowship	2015
NDSEG Graduate Fellowship (declined)	2015
Marshall Scholarship	2014
Renewed 2017-18	2017
Barry M. Goldwater Fellowship	2014
Flintridge Foundation Summer Undergraduate Research Fellowship	2014
US Department of Energy NERSC Allocation m1824 (PI):	
Renewal Allocation (PI, 50,000 core-hours)	2018
Renewal Allocation (PI, 50,000 core-hours)	2017
Renewal Allocation (PI, 50,000 core-hours)	2016
Renewal Allocation (PI, 50,000 core-hours)	2015
Renewal Allocation (PI, 15,000 core-hours)	2014
Startup Allocation (15,000 core-hours)	2013
Jean J. Dixon Summer Undergraduate Research Fellowship	2013
Ph11 Summer Research Fellowship	2012

Professional Memberships

Royal Astronomical Society	2016-
Association of Marshall Scholars	2015-
American Physical Society	2013-
Materials Research Society	2012-2015

Software

Skye: A Differentiable Equation of State	2020-
Modules for Experiments in Stellar Astrophysics (MESA) - Developer	2018-
PyTNR - Python module for contracting unstructured tensor networks (GPLv3, github)	2017-
NESSE - Quantum carrier transport code	2012-
2D Stars - Cambridge 2D Stellar Evolution Code	2015-18
AstroStatsSuite - Statistical tools for non-parametric regression in astronomy (GPLv3, github)	2017
TensorDecomp - Python module for computing tree decompositions of tensors (GPLv3, github)	2017
arrfunc - Python module for treating functions as lazily-evaluated arrays (MIT, github)	2017
AstroMicroPhysics - Python astronomical microphysics package	2015
QuantumChains - Numerical Condensed Matter Package (GPLv3, github)	2013-14
NanoImage - Atomic Force Microscopy Analysis (USPTO 13/534428)	2010-11

Patents

Jermyn, A. S., Silverman, J, Markovic, N, "System for Lightweight Image Processing," US Patent Number US 9,097,739 B2 (Filed 2011, Awarded 2015).

Mentoring

Graduate Students

Eoin Farrell

Co-supervised projects on subsurface convection and magnetism in early-type stars. 2021-

Alexander Dittmann

Co-supervised projects on stellar evolution in AGN disks (2 papers). 2020-

George Varnavides

Co-supervised projects on phonon transport in nanomaterials, carrier hydrodynamics (2 papers). 2017-

Undergraduate Students

Aidan Simpson

Supervised summer research project on stellar evolution in AGN disks. 2020

Jackie Lodman

Co-supervised research project on star formation and cosmic rays (1 paper). 2018

Peer-Reviewed Papers

First or Second Author

1. **Jermyn, A. S.**, Dittmann, A. J., Cantiello, M., Perna, R. Stellar Evolution in the Disks of Active Galactic Nuclei Produces Rapidly Rotating Massive Stars. The Astrophysical Journal (2021, arXiv:2102.13114).
2. **Jermyn, A. S.**, Schwab, J., Timmes, F. X., Bauer, E. Potekhina, A. Y. Skye: A Differentiable Equation of State. The Astrophysical Journal (2021, arXiv:2104.00691).
3. Cantiello, M. **Jermyn, A. S.**, Lin, D. N. C. Stellar Evolution in AGN Disks. The Astrophysical Journal (2021, arXiv:2009.03936). **Featured in AAS NOVA.**
4. Gandhi, S. N., **Jermyn, A. S.** Coupled Day-Night Models of Exoplanetary Atmospheres. Monthly Notices of the Royal Astronomical Society (2020, arXiv:2010.07303).
5. **Jermyn, A. S.**, Chitre, Shashikumar, M., Lesaffre, P., Tout, A. C. Convective Differential Rotation in Stars and Planets II: Observational and Numerical Tests. Monthly Notices of the Royal Astronomical Society (498, 3, 2020, arXiv:2008.09126).
6. **Jermyn, A. S.**, Chitre, Shashikumar, M., Lesaffre, P., Tout, A. C. Convective Differential Rotation in Stars and Planets I: Theory. Monthly Notices of the Royal Astronomical Society (498, 3, 2020, arXiv:2008.09125).
7. Varnavides, G., **Jermyn, A. S.**, Anikeeva, P., Felser, C., Narang, P. Generalized Electron Hydrodynamics, Vorticity Coupling, and Hall Viscosity in Crystals. Nature Communications (2020, arXiv:2002.08976).
8. **Jermyn, A. S.**, Cantiello, M. The Origin of the Bimodal Distribution of Magnetic Fields in Early-type Stars. arXiv:2006.08618. ApJ (900, 2, 2020).
9. Shindler, F., **Jermyn, A. S.** Algorithms for Tensor Network Contraction Ordering. arXiv:2001.08063. Machine Learning: Science and Technology (2020).
10. **Jermyn, A. S.**, Cao, W., Elam, W. A., De La Cruz, E. M., Lin, M. M. Directional allosteric regulation of protein filament length. Physical Review E (202 032409). 2020.
11. **Jermyn, A. S.** Automatic Contraction of Unstructured Tensor Networks. arXiv:1709.03080. SciPost Phys. 8, 005 (2020).
12. Steinhardt, C. L., **Jermyn, A. S.**, Lodman, J. Thermal Regulation and the Star-Forming Main Sequence. arXiv:1909.12303. The Astrophysical Journal (890, 1, 2019).
13. **Jermyn, A. S.**, Tayar, J., Fuller, J. Differential Rotation in Convective Envelopes: Constraints from Eclipsing Binaries. Monthly Notices of the Royal Astronomical Society (2019).
14. Varnavides, G., **Jermyn, A. S.**, Anikeeva, P., Narang, P. Non-Equilibrium Phonon Transport Across Nanoscale Interfaces. arXiv:1811.01059. 2019. Physical Review B (100, 115402).
15. **Jermyn, A. S.**, Tagliabue, G, Atwater, H, Goddard, W, Sundararaman, R, Narang, P. Far-from-equilibrium transport of excited carriers in nanostructures. arXiv:1707.07060. Physical Review Materials (3, 075201, 2019).
16. **Jermyn, A. S.** Efficient Decomposition of High-Rank Tensors. arXiv:1708.07471. Journal of Computational Physics 377 142-154 (2019).
17. **Jermyn, A. S.**, Steinhardt, C. L., Tout, C. A. The Cosmic Microwave Background and the Stellar Initial Mass Function. arXiv:1809.03502. Monthly Notices of the Royal Astronomical Society (2018).
18. **Jermyn, A. S.**, Tout, C. A., Chitre, S. M. Enhanced Mixing in Massive Rotating Stars. arXiv:1807.08766. Monthly Notices of the Royal Astronomical Society (480 4, 11, 5427-5446, 2018).
19. Rasmussen, A*, **Jermyn, A. S.*** Gapless Topological Order, Gravity, and Black Holes. Physical Review B (2018, PhysRevB97.165141, arXiv:1703.04772).
20. **Jermyn, A. S.**, Kama, M. Stellar Photospheric Abundances as a Probe of Disks and Planets. Monthly Notices of the Royal Astronomical Society (2018, 476 (4): 4418-4434, arXiv:1804.06414).
21. **Jermyn, A. S.**, Lesaffre, P, Tout, C. A., Chitre, S. M. Turbulence Closure for Mixing Length Theories. Monthly Notices of the Royal Astronomical Society (2018 476 (1): 646-662, arXiv:1803.00579). **Invited listing in the newsletter of the IAU Working Group on Red Giants and Supergiants.**
22. Steinhardt, L., C., **Jermyn, A. S.** Nonparametric Methods in Astronomy: Think, Regress, Observe – Pick Any Three. Proceedings of the Astronomical Society of the Pacific (2017, 130, 984, arXiv:1801.06545).

23. Tagliabue, G, **Jermyn, A. S.**, Sundararaman, R, Welch, A. J., DuChene, J. S., Davoyan, A. R., Narang, P, Atwater, H. Plasmonic hot electron transport drives nano-localized chemistry. arXiv:1708.02187. Nature Communications (Nat Commun. 2017; 8: 14880).
24. **Jermyn, A. S.**, Tout, A. C., Ogilvie, I. G. Tidal heating and solar irradiation of Hot Jupiters. Monthly Notices of the Royal Astronomical Society (2017 469 (2): 1768-1782, arXiv:1704.01126).
25. Chatwin-Davies, A, **Jermyn, A. S.**, Carroll, S. Retrieving Qubits from Black Holes. Physical Review Letters (2015, Phys.Rev.Lett.115,261302, arXiv:1507.03592). **Highlighted in Science News**.
26. **Jermyn, A. S.**, Mong, R, Alicea, J. Stability of zero-modes in parafermion chains. Physical Review B (2014, PhysRevB.90.165106, arXiv:1407.6376). **Editor's Suggestion (front webpage)**.

Co-Author

1. Cantiello, M., Lecoanet, D., **Jermyn, A. S.**, Grassitelli, L. On the Origin of Stochastic, Low-Frequency Photometric Variability in Massive Stars. The Astrophysical Journal (2021, arXiv:2102.05670).
2. Dittmann, A. J., Cantiello, M., **Jermyn, A. S.**. Accretion onto Stars in the Disks of Active Galactic Nuclei. The Astrophysical Journal. arXiv:2102.12484. 2021.
3. Gilkis, A., Shenar, T., Ramachandran, V., **Jermyn, A. S.**, Mahy, L., Oskinova, L. M., Arcavi, I., Sana, H. Monthly Notices of the Royal Astronomical Society (2021, arXiv:2102.03102).
4. Fielding, D., Ostriker, E. C., Bryan, G. L., **Jermyn, A. S.** Multiphase Gas and the Fractal Nature of Radiative Turbulent Mixing Layers. arXiv:2003.08390. Accepted in ApJL (2020).
5. Lecoanet, D., Cantiello, M., Quataert, E., Couston, L. A., Burns, K. J., Pope, B. J. S, **Jermyn, A. S.**, Favier, B., Le Bars, M. Low-frequency variability in massive stars: Core generation or surface phenomenon? arXiv:1910.01643. The Astrophysical Journal Letters (886, 1, 2019).
6. Kama, M., Shorttle, O., **Jermyn, A. S.**, Folsom, C. P., Furuya, K., Bergin, E. A., Walsh, C., Keller, L. Abundant refractory sulfur in protoplanetary disks. 2019. ApJ.
7. Paxton, B. et al. Modules for Experiments in Stellar Astrophysics (MESA): Pulsating Variable Stars, Rotation, Convective Boundaries, and Energy Conservation. arXiv:1093.01426. ApJS (243, 2019).
8. Fuller, J., Piro, A. L., **Jermyn, A. S.** Slowing the Spins of Stellar Cores. arXiv:1902.08227. Monthly Notices of the Royal Astronomical Society (2019).
9. Cortés, E, Xie, W, Cambiasso, J, **Jermyn, A. S.**, Sundararaman, R, Narang, P, Schlücker, S, Maier, S. Hot Electron Transport Driven Surface-Chemistry with Nanoscale Spatial Resolution. Nature Communications (2017).
10. Narang, P*, Sundararaman, R*, **Jermyn, A. S.**, Atwater, H, Goddard, W. Cubic nonlinearity driven upconversion in high-field plasmonic hot carrier systems. The Journal of Physical Chemistry C (2016).
11. Sundararaman, R*, Narang, P*, **Jermyn, A. S.***, Atwater, H, Goddard, W. Theoretical predictions for hot carrier generation from surface plasmon decay. Nature Communications 5, 5788 (2014).

Research Notes

1. **Jermyn, A. S.**, Chitre, S. M, Tout, C. A. Energy Budget of the Solar Cycle. RNAAS. 2019.

Submitted Papers

1. **Jermyn, A. S.**, Stevenson, D. J. Levitin, D. J. From Bach to Shamu: $1/f$ laws in non-human music. 2016.

Preprints

1. **Jermyn, A. S.** Bounding the Radius of Convergence of Analytic Functions. arXiv:1708.00343. 2017.

Conference Proceedings

1. Izzard, R. G., **Jermyn, A. S.** Post-AGB discs from common-envelope evolution. arXiv:1809.09172. Galaxies 6, 97 (2018).
2. Halabi, G. M., Izzard, R. G., Tout, C. A., **Jermyn, A. S.**, Cannon, R. 2DStars: A two-dimensional stellar evolution code. Mem. S.A.It. 75, 282 (2017).

Invited Talks

1. **Jermyn, A. S.**, Schwab, J., Bauer, E., Timmes, F. X., Potekhin, A. Skye: A Differentiable Equation of State. Princeton Astro Coffee. (2021).
2. **Jermyn, A. S.**, Schwab, J., Bauer, E., Timmes, F. X., Potekhin, A. Skye: A Differentiable Equation of State. UCSB Bildsten group meeting. (2021).
3. **Jermyn, A. S.**, Dittmann, A. J., Cantiello, M., Perna, R. Stellar Evolution in the Disks of Active Galactic Nuclei Produces Rapidly Rotating Massive Stars. University of Mizzouri Colloquium (2021).
4. **Jermyn, A. S.**, Tayar, J., Fuller, J., (2021) Tides, Differential Rotation and Eclipsing Binaries. CCA Stars Meeting.
5. **Jermyn, A. S.**, Cantiello, M. (2020) The Origin of the Bimodal Distribution of Magnetic Fields in Early-type Stars. AAS Author Chat.
6. **Jermyn, A. S.**, Cantiello, M., Lin, D. (2020) Stellar Evolution in AGN Disks. Where the Wild Things Are Flatiron Workshop.
7. **Jermyn, A. S.**, Cantiello, M., Lin, D. (2020) Stellar Evolution in AGN Disks. Princeton Astro Coffee. (2021).
8. **Jermyn, A. S.**, Tayar, J., Fuller, J., (2020) Tides, Differential Rotation and Eclipsing Binaries. KITP Exostars Redux Conference.
9. **Jermyn, A. S.**, Kama, M., (2020) Linking Stellar Composition with Accreting Material. Flatiron/CCA Planet Formation Group Meeting.
10. **Jermyn, A. S.** (2020) Differential Rotation in Convecting Stars. Cornell Astronomy Lunch Seminar.
11. **Jermyn, A. S.** (2019) Electron Hydrodynamics and Stellar Astrophysics: Testbeds for Exotic Fluid Behavior. Harvard SEAS Special Seminar.
12. **Jermyn, A. S.** (2019) Convection and Angular Momentum Tutorial. Flatiron/CCA Compact Objects Group Meeting.
13. **Jermyn, A. S.** (2019), MESA Tutorial. ExoStars KITP Meeting. doi:10.5281/zenodo.3066513
14. **Jermyn, A. S.**, Gandhi, S. N., Phinney, E. S. (2019), Circulations in Irradiated Stars and Giant Planets. UC Berkeley TAC Seminar.
15. **Jermyn, A. S.**, Lesaffre, P, Tout, C. A., Chitre, S. M. (2018), Enhanced Rotational Mixing in Massive Stars. ZTF Theory Meeting.
16. **Jermyn, A. S.**, Kama, M (2018), Probing the composition of disks and planets through accretion onto radiative stars. Cambridge Stars Group Talk.
17. **Jermyn, A. S.** (2017), Turbulence with Tensor Networks. Pappalardo Finalist Talk.
18. **Jermyn, A. S.**, Lesaffre, P, Tout, C. A., Chitre, S. M. (2017), Enhanced Rotational Mixing in Massive Stars. Caltech Tea Talk.
19. **Jermyn, A. S.**, Lesaffre, P, Tout, C. A., Chitre, S. M. (2017), Enhanced Rotational Mixing in Massive Stars. UCSB Lunch Talk.
20. **Jermyn, A. S.**, Lesaffre, P, Tout, C. A., Chitre, S. M. (2017), Enhanced Rotational Mixing in Massive Stars. Princeton Lunch Talk.
21. **Jermyn, A. S.**, Lesaffre, P, Tout, C. A., Chitre, S. M. (2017), Enhanced Rotational Mixing in Massive Stars. Harvard CfA Group Meeting.
22. **Jermyn, A. S.**, Lesaffre, P, Tout, C. A., Chitre, S. M. (2017), Enhanced Rotational Mixing in Massive Stars. MIT Astro Brown Bag Lunch Talk.
23. **Jermyn, A. S.**, Lesaffre, P, Tout, C. A., Chitre, S. M. (2017), Mixer: Numerical Perturbation Theory for Turbulence. Harvard ITC Lunch Seminar.
24. **Jermyn, A. S.**, Narang, P., Sundararaman, R. (2017), Charge Transport: Ballistics and Diffusion. Kavli Discussion, Harvard SEAS.
25. **Jermyn, A. S.**, Tout, C. A., Chitre, S. M., Lesaffre, P. (2017), Meridional Flow and Mixing in Massive Stars. Cake Talk, Neils Bohr Institute, University of Copenhagen.
26. **Jermyn, A. S.**, Tout, C. A., Chitre, S. M., Lesaffre, P. (2017), Meridional Flow and Mixing in Massive Stars. Seminar, Institute of Astronomy, University of Cambridge.
27. **Jermyn, A. S.**, Phinney, E.S. (2016). The Atmospheric Dynamics of Pulsar Companions. Invited Talk (Apker Prize), APS April.
28. **Jermyn, A. S.**, Mong, R, Alicea, J (2014), Stability of zero-modes in parafermion chains. Institute for Quantum Information and Matter.

Contributed Talks

1. **Jermyn, A. S.**, Dittmann, A. J., Cantiello, M., Perna, R. AGN Stars Spin Fast. Flatiron CCA Lunch Talk (2021).
2. **Jermyn, A. S.**, Schwab, J., Bauer, E., Timmes, F. X. Skye: A Differentiable Equation of State. Flatiron CCA Lunch Talk (2021).
3. **Jermyn, A. S.**, Fuller, J. Lithium Production on the Red Clump. Flatiron CCA Lunch Talk (2020).
4. **Jermyn, A. S.**, Cantiello, M. Origin of Magnetic Fields in O/B/A Stars. Flatiron CCA Lunch Talk (2020).
5. **Jermyn, A. S.**, Timmes, F. Post-AGB Pulsators. Flatiron CCA Lunch Talk (2020).
6. **Jermyn, A. S.**, Tout, C. A., Chitre, S. M., Lesaffre, P. Differential Rotation in Stellar Convection Zones. Universality: Turbulence Across Scales conference (2019).
7. **Jermyn, A. S.**, Tayar, J., Fuller, J. Differential Rotation in Convective Envelopes: Constraints from Eclipsing Binaries. Flatiron CCA Lunch Talk (2019).
8. **Jermyn, A. S.**, Kama, M, Linking Stellar Composition with Accreting Material. UCSB Lunch Talk (2018).
9. **Jermyn, A. S.**, Lesaffre, P, Tout, C. A., Chitre, S. M. (2018), Enhanced Rotational Mixing in Massive Stars. UK National Astronomical Meeting.
10. **Jermyn, A. S.** Efficient Contraction of Unstructured Tensor Networks. APS March (2018).
11. **Jermyn, A. S.**, Tout, C. A., Chitre, S. M., Lesaffre, P. Meridional Flow and Mixing in Massive Stars. Bridge Chemical Evolution Meeting (2017).
12. **Jermyn, A. S.**, Tout, C. A., Chitre, S. M., Lesaffre, P. Tidal Heating and Solar Irradiation of Hot Jupiters. Churchill Conference on Everything (2017).
13. **Jermyn, A. S.** Automatic Renormalization of Local Tensor Networks. APS March (2017).
14. **Jermyn, A. S.**, Phinney, E.S. Exterior Stellar Heating. APS Apker Finalist Seminar (2015).
15. **Jermyn, A. S.**, Sundararaman, R., Narang, P., Goddard, W., Atwater, H. Plasmonic Hot Carrier Transport and Collection in Nanostructures. APS March (2015).
16. **Jermyn, A. S.**, Phinney, E.S. Exterior Stellar Heating. Caltech SURF Seminar (2014).
17. **Jermyn, A. S.**, Mong, R., Alicea, J., Robustness of zero-modes in parafermion chains. APS March (2014).
18. **Jermyn, A. S.**, Alicea, J., Mong, R. The Stability of Zero Energy Edge Modes in 1D Quantum Chains. Caltech SURF Seminar (2013).
19. **Jermyn, A. S.** The Fluid Behavior of Electron Aggregates. Massachusetts Junior Academy of Sciences Symposium (2010).

Posters

1. **Jermyn, A. S.**, Lesaffre, P, Tout, C, A 2D Magnetic Mixing Length Theory. Cambridge Fluids Network Meeting 2016.
2. Sundararaman, R, Narang, P, **Jermyn, A. S.**, Brown, A, Goddward, W, Atwater, H, Generation and transport of hot carriers in plasmonic nanostructures. Joint Center for Artificial Photosynthesis All-Hands 2015.
3. Narang, P, Sundararaman, R, **Jermyn, A. S.**, Bouma, L, Goddard, W, Atwater, H, Surface Plasmon Decay Dynamics: A Feynman Diagram Approach. Gordon Research Conference 2014.
4. Sundararaman, R, Narang, P, **Jermyn, A. S.**, Atwater, H, Goddard, W, First principles theory of plasmonic hot carrier generation in nano-structured systems. Gordon Research Conference 2014.
5. Narang, P, Sundararaman, R, **Jermyn, A. S.**, Localized Surface Plasmon Decay Dynamics. MRS Spring 2014.
6. Sundararaman, R, Narang, P, **Jermyn, A. S.**, Atwater, H, Goddard, W, First Principles Calculations for Surface Plasmon Decays and Solvation Models for Surfaces in Solution. Joint Center for Artificial Photosynthesis All-Hands 2014.

7. Narang, P, Sundararaman, R, **Jermyn, A. S.**, Creel, E, Atwater, H, Goddard, W, Plasmon-driven Solar Energy Conversion and Catalysis: A First Principles Study. Joint Center for Artificial Photosynthesis All-Hands 2014.
8. Markovic, N, Silverman, S, **Jermyn, A. S.**, Rivera, R. Optical Properties of Unfunctionalized Ultra-Short Carbon Nanotubes. Poster 135, MRSEC Summer Research Experience Poster Session 2010.

Teaching

Princeton Teaching Assistant:

Astrophysics 514 - Structure of the Stars	2021

UCSB Teaching Assistant:

MESA Summer School -	2019

Cambridge Supervisor:

Mathematics: Numerical Analysis (Part IB)	2018
Mathematics: Mathematical Biology (Part II)	2017
Mathematics: Binary Stars (Part III - Masters Course)	2017
Mathematics: Computational Projects (Part IB)	2016
Mathematics: Structure and Evolution of Stars (Part III - Masters Course)	2016
Natural Sciences: Mathematics (Part IA)	2016
Physics: Astrophysical Fluid Dynamics (Part II)	2015

Caltech Teaching Assistant:

Ph101 - Order of Magnitude Physics (Prof. E. S. Phinney)	2015
Ph11 - Freshman Research Tutorial (Profs. David Stevenson and Rob Phillips)	2014-15
Ph7 - Radiation Lab (Graduate TA/Section Leader for Dr. Frank Rice)	2014
Ph6 - Atomic Physics Lab (Graduate TA/Section Leader for Dr. Frank Rice)	2014
Ph5 - Analog Circuits Lab (Undergraduate TA for Dr. Frank Rice)	2013
Ph6 - Atomic Physics Lab (Undergraduate TA for Dr. Frank Rice)	2013

Caltech Tutor:

Ph205a - Relativistic Quantum Field Theory	2014-15
Ph106 - Graduate Classical Mechanics and Electromagnetism	2013-15
Ph127 - Graduate Statistical Physics	2013-15
Ph236a - General Relativity	2013-15
Ch1 - Freshmen Chemistry	2012-15
Ma1 - Freshmen Math (Analysis, Linear Algebra, Multivariable Calculus)	2012-15
Ma2 - Sophomore Math (Probability, Statistics, and Differential Equations)	2012-15
Ph2 - Sophomore Physics (Waves, Quantum Mechanics, and Thermodynamics)	2012-15
Ph12 - Advanced Sophomore Physics (Waves, Quantum Mechanics, and Thermodynamics)	2012-15
ACM95 - Graduate Methods of Applied and Computational Mathematics	2012-15
Ph125 - Graduate Quantum Mechanics	2012-15

Caltech Guest Lecturer:

Ph50 - Physics League (Seminar)	2017
Ph11 - Freshman Research Tutorial	2013, 2016, 2017

Unaffiliated Tutor:

High School Physics Olympiad Preparation	2016

Other:

Experimental Design (Thin Film Deposition) for Senior Lab	2014
Editor, Ph5 Laboratory Manual	2013

Outreach

1. **Jermyn, A. S.** (2021) Stars over Time. Talk at Sprintfield Telescope and Reflector Society.
2. **Jermyn, A. S.** (2020) Tides, Differential Rotation and Eclipsing Binaries. Talk at Sprintfield Telescope and Reflector Society.
3. Blog post on Quantum Frontiers: `https://quantumfrontiers.com/2018/11/03/a-roman-in-a-modern-court/`.
4. Contributed text on the history of stellar dynamics to an upcoming biography of James Jeans. 2017.
5. Volunteer at Cambridge Science Festival. 2016-17.
6. **Jermyn, A. S.**, Tout, C. A., Chitre, S. M., Lesaffre, P. Mixing in Massive Stars. Churchill MCR ChuTalk (Outreach Talk) (2017).

7. Co-Organized Institute of Astronomy Undergraduate Journal Club. 2016-17.
8. **Jermyn, A.** Gravitational waves open new window to cosmos. Reach for the Stars Guest Column on MassLive. URL: `http://www.masslive.com/living/index.ssf/2016/03/reach_for_the_stars_gravitational_waves_open_new_window_to_cosmos.html`. March 2016.
9. Volunteer at Cambridge Institute of Astronomy Public Outreach events 2016.
10. Handmer, C. **Jermyn, A. S.**, Paragano, M., Lommen, P, Nosanov, J. The Martian: A Technical Commentary. URL: `http://caseyexaustralia.blogspot.co.uk/2015/10/the-martian-technical-commentary.html`. October 2015.
11. **Jermyn, A. S.**, Hung, P. Caltech Teaching Conference Opening Session. Caltech Center for Teaching, Learning, and Outreach Invited Talk. September 2014.
12. **Jermyn, A. S.** A Summer of Physics. Invited talk at the Skyscrapers Amateur Astronomical Society of Rhode Island. July 2011.
13. Recurring guest speaker at the Springfield Telescope and Reflector Society and Amherst Area Amateur Astronomy Association (2006-2019).

Employment

Undergraduate IT Support	2011-14

Service

Referee:

Astronomy and Astrophysics	2020-
The Astrophysical Journal	2020-
The Astronomical Journal	2020-
Physical Review Letters	2020-
Monthly Notices of the Royal Astronomical Society	2020-

Flatiron Institute:

Session Chair for Conference "Universality: Turbulence across Scales"	2019

KITP:

Diversity Coordinator for KITP program "Probes of Transport in Stars"	2020-2021
Co-organizer of the KITP Local's Lunch Seminars	2018-19

Cambridge:

Representative to the Institute of Astronomy Athena SWAN/Juno committee	2016-17
Institute of Astronomy Computing Users' Committee	2017
Astronomy Graduate Student Forum Representative	2015-17
Representative to the School of Physical Sciences Graduate Education Committee Workshop	2016

Caltech:

Search Committee for the Vice President for Student Affairs	2014-15
Dean's Advisory Council	2014-15
Contributing Writer - The California Tech	2014-15
Academics and Research Committee	2012-15
Curriculum Committee	2012-15
Commencement Speaker Selection Committee	2014-15
Physics Student Faculty Conference Committee	2013-15
Physics Option Mentor	2013-15
Upperclassmen Counselor	2013-15
Council for Undergraduate Education	2013-15
Information Management Systems and Services Representative	2012-15
Title IX Committee	2014-15
Faculty Board Ad Hoc Honor Code Task Force	2013-14
Undergraduate Honor Code Committee	2013-14
Housing Stewardship Committee	2013-14
Dabney House Treasurer	2013-14
Computer Advisory Committee	2012-14
Dabney House Comptroller	2012-13

Skills

Programming Languages:

Experienced: Python (NumPy/SciPy), Mathematica, Fortran, Matlab
Familiar: Java, C++, C, Bash

Other:

Programming and using Finite Element codes
Density Matrix Renormalization Group methods
Markov Chain and Nested Sampling methods
Massively parallel programming
Finite Difference Time Domain EM Simulations (Meep)
Familiarity with Unix/Linux environments