

Adam S. Jermyn

Home: 18 Duxbury Lane, Longmeadow, MA 01106-2006, USA

Work: Center for Computational Astrophysics, Flatiron Institute, New York, NY 10010

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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	2015-18
Barry M. Goldwater Fellowship	2014
Flintridge Foundation Summer Undergraduate Research Fellowship	2014
US Department of Energy NERSC Allocation m1824 (PI, 230,000 core-hours)	2013-18
Jean J. Dixon Summer Undergraduate Research Fellowship	2013
Ph11 Summer Research Fellowship	2012

Professional Memberships

Royal Astronomical Society	2016-21
Association of Marshall Scholars	2015-21
American Physical Society	2013-21
Materials Research Society	2012-2015

Software

Spartans - Quantum carrier transport code	2020-2021
Skye - A Differentiable Equation of State for ionized matter	2020-2021
Modules for Experiments in Stellar Astrophysics (MESA) - Developer	2018-2021
PyTNR - Python module for contracting unstructured tensor networks	2017-2021
NESSE - Quantum carrier transport code	2012-2021
2D Stars - Cambridge 2D Stellar Evolution Code	2015-2018
AstroStatsSuite - Statistical tools for non-parametric regression in astronomy	2017
TensorDecomp - Python module for computing tree decompositions of tensors	2017
arrfunc - Python module for treating functions as lazily-evaluated arrays	2017
AstroMicroPhysics - Python astronomical microphysics package	2015
QuantumChains - Numerical Condensed Matter Package (GPLv3, github)	2013-2014
NanoImage - Atomic Force Microscopy Analysis (USPTO 13/534428)	2010-2011

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). 2020-2021

George Varnavides

Co-supervised projects on electron & phonon transport, hydrodynamics (2 papers). 2017-2021

Evan Anders

Co-supervised projects on convective boundaries in massive stars (1 paper). 2020

Undergraduate Students

Aidan Simpson

Co-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. Anders, E. H., **Jermyn, A. S.**, Lecoanet, D., Brown, B. P. Stellar convective penetration: parameterized theory and dynamical simulations. *The Astrophysical Journal* (2021, arXiv:2110.11356).
2. **Jermyn, A. S.**, Cantiello, C. Magnetic Archaeology of Early-Type Stellar Dynamos. *The Astrophysical Journal* (2021, arXiv:2110.03695).
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. *The Astrophysical Journal* (2021, arXiv:2102.13114).
4. **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).
5. 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.**
6. Gandhi, S. N., **Jermyn, A. S.** Coupled Day-Night Models of Exoplanetary Atmospheres. *Monthly Notices of the Royal Astronomical Society* (2020, arXiv:2010.07303).
7. **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).
8. **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).
9. 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).
10. **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).
11. Shindler, F., **Jermyn, A. S.** Algorithms for Tensor Network Contraction Ordering. arXiv:2001.08063. *Machine Learning: Science and Technology* (2020).
12. **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.
13. **Jermyn, A. S.** Automatic Contraction of Unstructured Tensor Networks. arXiv:1709.03080. *SciPost Phys.* 8, 005 (2020).
14. 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).
15. **Jermyn, A. S.**, Tayar, J., Fuller, J. Differential Rotation in Convective Envelopes: Constraints from Eclipsing Binaries. *Monthly Notices of the Royal Astronomical Society* (2019).
16. 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).
17. **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).
18. **Jermyn, A. S.** Efficient Decomposition of High-Rank Tensors. arXiv:1708.07471. *Journal of Computational Physics* 377 142-154 (2019).
19. **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).
20. **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).
21. Rasmussen, A*, **Jermyn, A. S.*** Gapless Topological Order, Gravity, and Black Holes. *Physical Review B* (2018, PhysRevB97.165141, arXiv:1703.04772).
22. **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).
23. **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.**

24. 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).
25. 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).
26. **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).
27. 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.**
28. **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. McKernan, B., Ford, K. E. S., Cantiello, M., Graham, M. J., **Jermyn, A. S.**, Leigh, N. W. C., Ryu, T., Stern, D. Starfall: A heavy rain of stars in 'turning on' AGN. 2021.
2. Steinhardt, C. L., Sneppen, A., Hensley, H., **Jermyn, A. S.**, Mostafa, B., Weaver, J., Brammer, G., Davidzon, I., Mobasher, B., Rusakov, V., Toft, S. Implications of a Temperature Dependent IMF III: Mass Growth and Quiescence. 2021.
3. Steinhardt, C. L., Sneppen, A., Mostafa, B., Hensley, H. **Jermyn, A. S.**, Lopez, A., Weaver, J., Brammer, G., Clark, T. H., Davidzon, I., Diaconu, A. C., Mobasher, B., Rusakov, V., Toft, S. Implications of a Temperature Dependent IMF II: An Updated View of the Star-Forming Main Sequence. 2021.
4. Sneppen, A., Steinhardt, C. L., Hensley, H., **Jermyn, A. S.**, Mostafa, B., Weaver, John. R. Implications of a Temperature Dependent IMF I: Photometric Template Fitting. 2021.
5. Izzard, R. G., **Jermyn, A. S.**. Circumbinary discs for stellar population models. 2021.

6. Anders, E. H., **Jermyn, A. S.**, Lecoanet, D., Brown, B. P. Convective penetration: It exists and we found it. 2021.

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.**, Dittmann, A. J., Cantiello, M., Perna, R. Stellar Evolution in AGN Stars. Caltech Astronomy Colloquium (2021).
2. **Jermyn, A. S.**, Dittmann, A. J., Cantiello, M., Perna, R. Stellar Evolution in AGN Stars. Harvard CfA Seminar (2021).
3. **Jermyn, A. S.** Time-Dependent Convection in MESA. UCSB Bildsten group meeting. (2021).
4. **Jermyn, A. S.**, Schwab, J., Bauer, E., Timmes, F. X., Potekhin, A. Skye: A Differentiable Equation of State. Princeton Astro Coffee. (2021).
5. **Jermyn, A. S.**, Schwab, J., Bauer, E., Timmes, F. X., Potekhin, A. Skye: A Differentiable Equation of State. UCSB Bildsten group meeting. (2021).
6. **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 Missouri Colloquium (2021).
7. **Jermyn, A. S.**, Tayar, J., Fuller, J., (2021) Tides, Differential Rotation and Eclipsing Binaries. CCA Stars Meeting.
8. **Jermyn, A. S.**, Cantiello, M. (2020) The Origin of the Bimodal Distribution of Magnetic Fields in Early-type Stars. AAS Author Chat.
9. **Jermyn, A. S.**, Cantiello, M., Lin, D. (2020) Stellar Evolution in AGN Disks. Where the Wild Things Are Flatiron Workshop.
10. **Jermyn, A. S.**, Cantiello, M., Lin, D. (2020) Stellar Evolution in AGN Disks. Princeton Astro Coffee. (2021).
11. **Jermyn, A. S.**, Tayar, J., Fuller, J., (2020) Tides, Differential Rotation and Eclipsing Binaries. KITP Exostars Redux Conference.
12. **Jermyn, A. S.**, Kama, M., (2020) Linking Stellar Composition with Accreting Material. Flatiron/CCA Planet Formation Group Meeting.
13. **Jermyn, A. S.** (2020) Differential Rotation in Convecting Stars. Cornell Astronomy Lunch Seminar.
14. **Jermyn, A. S.** (2019) Electron Hydrodynamics and Stellar Astrophysics: Testbeds for Exotic Fluid Behavior. Harvard SEAS Special Seminar.
15. **Jermyn, A. S.** (2019) Convection and Angular Momentum Tutorial. Flatiron/CCA Compact Objects Group Meeting.
16. **Jermyn, A. S.** (2019), MESA Tutorial. ExoStars KITP Meeting. doi:10.5281/zenodo.3066513
17. **Jermyn, A. S.**, Gandhi, S. N., Phinney, E. S. (2019), Circulations in Irradiated Stars and Giant Planets. UC Berkeley TAC Seminar.
18. **Jermyn, A. S.**, Lesaffre, P., Tout, C. A., Chitre, S. M. (2018), Enhanced Rotational Mixing in Massive Stars. ZTF Theory Meeting.
19. **Jermyn, A. S.**, Kama, M (2018), Probing the composition of disks and planets through accretion onto radiative stars. Cambridge Stars Group Talk.
20. **Jermyn, A. S.** (2017), Turbulence with Tensor Networks. Pappalardo Finalist Talk.
21. **Jermyn, A. S.**, Lesaffre, P., Tout, C. A., Chitre, S. M. (2017), Enhanced Rotational Mixing in Massive Stars. Caltech Tea Talk.
22. **Jermyn, A. S.**, Lesaffre, P., Tout, C. A., Chitre, S. M. (2017), Enhanced Rotational Mixing in Massive Stars. UCSB Lunch Talk.

23. **Jermyn, A. S.**, Lesaffre, P., Tout, C. A., Chitre, S. M. (2017), Enhanced Rotational Mixing in Massive Stars. Princeton Lunch Talk.
 24. **Jermyn, A. S.**, Lesaffre, P., Tout, C. A., Chitre, S. M. (2017), Enhanced Rotational Mixing in Massive Stars. Harvard CfA Group Meeting.
 25. **Jermyn, A. S.**, Lesaffre, P., Tout, C. A., Chitre, S. M. (2017), Enhanced Rotational Mixing in Massive Stars. MIT Astro Brown Bag Lunch Talk.
 26. **Jermyn, A. S.**, Lesaffre, P., Tout, C. A., Chitre, S. M. (2017), Mixer: Numerical Perturbation Theory for Turbulence. Harvard ITC Lunch Seminar.
 27. **Jermyn, A. S.**, Narang, P., Sundararaman, R. (2017), Charge Transport: Ballistics and Diffusion. Kavli Discussion, Harvard SEAS.
 28. **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.
 29. **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.
 30. **Jermyn, A. S.**, Phinney, E.S. (2016). The Atmospheric Dynamics of Pulsar Companions. Invited Talk (Apker Prize), APS April.
 31. **Jermyn, A. S.**, Mong, R., Alicea, J (2014), Stability of zero-modes in parafermion chains. Institute for Quantum Information and Matter.
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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, Goddard, 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.
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Teaching

Princeton Teaching Assistant:

Astrophysics 514 - Structure of the Stars 2021-2022

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) 2014-2015

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 2014-2015

Ph106 - Graduate Classical Mechanics and Electromagnetism 2013-2015

Ph127 - Graduate Statistical Physics 2013-2015

Ph236a - General Relativity 2013-2015

Ch1 - Freshmen Chemistry 2012-2015

Ma1 - Freshmen Math (Analysis, Linear Algebra, Multivariable Calculus) 2012-2015

Ma2 - Sophomore Math (Probability, Statistics, and Differential Equations) 2012-2015

Ph2 - Sophomore Physics (Waves, Quantum Mechanics, and Thermodynamics) 2012-2015

Ph12 - Advanced Sophomore Physics (Waves, Quantum Mech., and Thermodynamics) 2012-2015

ACM95 - Graduate Methods of Applied and Computational Mathematics 2012-2015

Ph125 - Graduate Quantum Mechanics 2012-2015

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

Talks:	
Stars over Time. Springfield MA Telescope and Reflector Society	2021
Tides and Eclipsing Binaries. Springfield MA Telescope and Reflector Society	2020
Recurring guest speaker at various Massachusetts Amateur Astronomy Societies	2006-2019
Mixing in Massive Stars. Churchill MCR Outreach Series	2017
Caltech Teaching Conference Opening Session. Caltech CTLO	2014
A Summer of Physics. Skyscrapers Amateur Astronomical Society of Rhode Island	2011
Writing:	
Blog post on explaining the modern economy to ancient Romans (Quantum Frontiers)	2019
Chapter on the history of stellar dynamics in a biography of James Jeans	2017
Gravitational waves open new window to cosmos MassLive Guest Column	2016
Contributed to The Martian: A Technical Commentary	2015
Volunteering:	
Volunteer at Cambridge Science Festival	2016-17
Co-Organized Institute of Astronomy Undergraduate Journal Club	2016-17
Volunteer at Cambridge Institute of Astronomy Public Outreach events	2016

Employment

Undergraduate IT Support	2011-14
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Service

Referee:	
NASA ATP Review Panel for Stars	2021
Astronomy and Astrophysics	2020-2021
The Astrophysical Journal	2020-2021
The Astronomical Journal	2020-2021
Physical Review Letters	2020-2021
Monthly Notices of the Royal Astronomical Society	2020-2021
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	2018-2019
Cambridge:	
Representative to the Institute of Astronomy Athena SWAN/Juno committee	2016-2017
Institute of Astronomy Computing Users’ Committee	2017
Astronomy Graduate Student Forum Representative	2015-2017
Representative to the School of Physical Sciences Graduate Education Committee Workshop	2016
Caltech:	
Search Committee for the Vice President for Student Affairs	2014-2015
Dean’s Advisory Council	2014-2015
Contributing Writer - The California Tech	2014-2015
Academics and Research Committee	2012-2015
Curriculum Committee	2012-2015
Commencement Speaker Selection Committee	2014-2015
Physics Student Faculty Conference Committee	2013-2015
Physics Option Mentor	2013-2015
Upperclassmen Counselor	2013-2015
Council for Undergraduate Education	2013-2015
Information Management Systems and Services Representative	2012-2015
Title IX Committee	2014-2015
Faculty Board Ad Hoc Honor Code Task Force	2013-2014

Undergraduate Honor Code Committee	2013-2014
Housing Stewardship Committee	2013-2014
Dabney House Treasurer	2013-2014
Computer Advisory Committee	2012-2014
Dabney House Comptroller	2012-2013

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

Familiarity with Unix/Linux environments