

Dr. Cassandra Hall F.R.A.S. PH.D. MPHYS (HONS)

Assistant Professor of Computational Astrophysics
University of Georgia

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Last updated 21 Jun 2026

APPOINTMENTS

- **Assistant Professor of Computational Astrophysics** 2020–Present
University of Georgia, USA
Georgia Museum of Natural History Fellow 2025 - Present
Institute for Artificial Intelligence Faculty Fellow Jan 2024 - Present
Observatory Director Jan 2023 - Present
Lilly Teaching Fellow Sep 2021 - Sep 2023
- **Winton Exoplanet Fellow** 2018–2020
University of Leicester, U.K.
- **Postdoctoral Research Associate** 2017–2018
University of Leicester, U.K.

EDUCATION

- **University of Edinburgh** 2017
PhD in Astronomy
- **University of Sheffield** 2013
MPhys (Hons) in Physics & Astrophysics

AWARDS

- **Fred C. Davison Early Career Scholar Award** 2026
This award recognizes outstanding accomplishment and evidence of potential future success in scholarship, creative work or research by an early career faculty member in the sciences.
- **Cottrel Scholar Award** 2026
The Cottrell Scholar Award honors exceptional teacher-scholars recognized by their scientific communities for the quality and innovation of their research and academic leadership (\$120,000)
- **National Geographic Explorer** 2024
Selected as a [National Geographic Explorer](#), joining a global network of visionary scientists, educators, and storytellers recognized as “*exceptional individuals in their fields who receive funding and support from the Society to illuminate and protect our world through their work in science, exploration, education, and storytelling.*”
- **Royal Astronomical Society Early Career Winton Award** 2021
Awarded annually to one early-career astronomer in recognition of outstanding achievement in the field (full citation in appendix).
- **University of Leicester Merit Award for Outstanding Performance** 2019
Received due to exceptional research and service performance.

GRANTS, FELLOWSHIPS AND SCHOLARSHIPS.

Awarded over \$1 million in external funding as principal investigator since PhD graduation, \$3 million in total as either principal investigator, co-investigator or other role.

- **Cottrell Scholarship** 2024
 Principal Investigator USD 120,000
Small worlds in tight spaces: Understanding the Formation and Assembly of the Most Common Exoplanets in the Universe.
- **National Science Foundation Astronomy & Astrophysics** 2025
 Co-Principal Investigator USD 403,964
2511672 & 2511673: Collaborative Research: Ab Aurigae as a testbed for the earliest stages of planet formation
- **National Science Foundation Astronomy & Astrophysics** 2024
 Principal Investigator USD 306,464
2407679: DECIPHER: Deep computer vision in the astrophysics of planet formation
- **National Geographic Society Explorer Grant** 2024
 Principal Investigator USD 20,000
Using artificial intelligence to find the hidden birth of exoplanets
- **National Radio Astronomy Observatory Student Observing Support Grant** 2024
 Principal Investigator USD 40,000
- **UGA Provost's Affordable Course Materials Grant** 2024
 Principal Investigator USD \$5,000
Dynamical measurement of the AB Aurigae disk mass
- **Georgia Museum of Natural History Fellow** 2024
 Selected as a Fellow of the Georgia Museum of Natural History.
- **Institute for Artificial Intelligence Faculty Fellow** 2024
 Elected member of UGA's Institute for Artificial Intelligence.
- **National Radio Astronomy Observatory Student Observing Support Grant** 2023
 Principal Investigator USD 23,000
Understanding the Complex Substructure of MWC 758
- **Australian Research Council Discovery Projects** 2023
 Partner Investigator USD 390,000
DP230101439: Planet Formation at Solar System Scales with the JWST
- **Lilly Teaching Fellowship** 2021
 Competitive fellowship awarded to UGA faculty who demonstrate a strong commitment to teaching excellence and innovation (\$2000).
- **Fellow of the Royal Astronomical Society (F.R.A.S.)** 2020
 Elected as a Fellow of the Royal Astronomical Society in recognition of professional contributions to astronomy.
- **Winton Exoplanet Fellowship** 2018
 Prize postdoctoral fellowship of £204,000 (\$275,000) supporting outstanding researchers advancing the detection and characterization of exoplanets.
- **EU Rise DUSTBUSTERS Program** 2018
 Named Beneficiary EUR 639,000 (\$747,000)
Dust and gas in planet forming discs
- **UK Science and Technology Facilities Council PhD Scholarship** 2013
 Fully funded doctoral scholarship (£59,000 or \$79,000) awarded to support graduate research in astro-

physics.

- **Royal Astronomical Society Undergraduate Research Grant** 2012
Student investigator £1200
N-body simulations of fractal star clusters

FACILITY AWARDS

- 150.1h ALMA Cycle 8 observing time (Co-I, 2021.1.01123.L) 2021
- 11.7h ALMA Cycle 8 observing time (Co-I, 2021.1.00690.S) 2021
- 5.34M DiRAC CPU hours, 58k DiRAC GPU hours (Co-I, project lead) 2019
- 8.16M DiRAC CPU hours (Co-I, project lead) 2018
- 4 nights observing as a visiting astronomer at VLT (project 198.C-0104) 2017

SCIENTIFIC LEADERSHIP

The Square Kilometre Array (SKA) will be the world's largest radio telescope. SKA1-MID is designed to observe the Universe up to 15GHz. However, there is a significant science case for extending functionality to well beyond 15 GHz in a Band 6 receiver suite. I have been instrumental in driving the community led science case for this, since higher frequencies in this range will probe grain growth (cm emission mostly comes from mm grains, while cm emission can be dominated by free-free emission). I co-authored the science case for Planet Formation (Grain Growth) with Leonardo Testi, Melvin Hoare and John Ilee, preventing damaging cuts being made to capabilities essential for planet formation science.

SCIENTIFIC PROJECT MEMBERSHIP

- PLATO Consortium 2018–present
- Member of SKA Cradle of Life Working Group 2018–present
- European Astrobiology Institute Project Team: Protoplanetary Disks and their Physical and Chemical Processes 2020–present
- exoALMA 2022–present
- COST Action The Birth of Solar Systems: WG3 – Theory Confronts Observations 2022–present
- COST Action WG4 – Emerging Habitable Environments 2022–present
- European Astrobiology Institute Working Group: Formation and Evolution of Planetary Systems and Detection of Habitable Worlds 2024–present

STUDENT AND POSTDOCTORAL SUPERVISION AND MENTORSHIP

FORMER POSTDOCTORAL RESEARCH ASSOCIATES

- **Dr. Hans Baehr** 2022 - 2024
Postdoctoral Research Associate. University of Georgia

CURRENT GRADUATE STUDENTS: THESIS ADVISOR

- **Jared Maller** 2024–present
PhD student, University of Georgia.
- **Juvis MBeng** 2023–present
PhD student, University of Georgia.
- **Ian Drury** 2023–present
PhD student, University of Georgia.
- **James Sargent** 2021–present
PhD student, University of Georgia.

FORMER GRADUATE STUDENTS: THESIS ADVISOR

- **Matthew Hinton-Murray** 2021–2024
Master's student, University of Georgia. Thesis: *A Numerical Investigation of the Back Reaction of Dust and Gas on Accretion Disc Morphology*. Next placement: Owner, Matt's Magic Writing LLC and teacher in the Colorado School System.
- **Jason Patrick Terry** 2020–2024
PhD student, University of Georgia. Thesis: *Instability, Perturbations, and Substructure in Protoplanetary Discs*. Next placement: Postdoctoral Research Associate, University of Oxford, UK.

FORMER GRADUATE STUDENTS: OTHER

- **Jessica Speedie** 2022–2024
PhD student, University of Victoria. Co-supervised sub-project of thesis that resulted in a *Nature* publication, "Gravitational instability in a planet-forming disk." Next placement: 51 Peg b Fellow, MIT (Sep 2025).
- **James Cadman** 2020–2022
PhD student, University of Edinburgh. Supervisory role of three sub-projects of thesis that resulted in publication.
- **Jack Humphries** 2019–2020
PhD student, University of Leicester. Supervisory role of sub-project of thesis that resulted in publication.
- **Benedetta Veronesi** 2018–2020
PhD student, University of Milan. Supervisory role of sub-project of thesis that resulted in publication.
- **Teresa Paneque** 2018–2020
Master's student, University of Chile. Supervisory role of sub-project of thesis during visit to the University of Leicester that resulted in publication.

CURRENT UNDERGRADUATE STUDENTS

- **Anna-Sophia Mehta** 2024–present
Undergraduate, University of Georgia. Project: Hierarchical clustering of protoplanetary discs.
- **Edward Kenyon** 2024–present
Undergraduate, University of Georgia. Project: Photosynthesis on the surface of circumbinary exoplanets.
- **Aaron Ettinger** 2024–present
Undergraduate, University of Georgia. Project: Photosynthesis on the surface of circumbinary exoplanets.
- **Mckinley Brady** 2024–present
Undergraduate, University of Georgia. Project: Photosynthesis on the surface of circumbinary exoplanets.
- **Ashvi Jariwala** 2024–present
Undergraduate, University of Georgia. Project: Photosynthesis on the surface of circumbinary exoplanets.
- **Randa Ameda** 2024–present
Undergraduate, University of Georgia. Project: Photosynthesis on the surface of circumbinary exoplanets.
- **Hannah Dobson** 2024–present
Undergraduate, University of Georgia. Project: Photosynthesis on the surface of circumbinary exoplanets.
- **Liam Brake** 2024–present
Undergraduate, University of Georgia. Project: Photosynthesis on the surface of circumbinary exoplanets.
- **Jaxon Elmore** 2024–present

Undergraduate, University of Georgia. Project: Photosynthesis on the surface of circumbinary exoplanets.

FORMER UNDERGRADUATE STUDENTS

- **Elaine Gammon** 2023–2024
Undergraduate, University of Georgia. Project: High-redshift dusty galaxies with JWST, co-supervised with colleagues at the University of Texas at Austin. Next placement: PhD at University of Washington.
- **Catherine Schilling** 2021–2023
Undergraduate, University of Georgia. Project: Determination of the role that dust plays in growth of spiral modes in gravitational instability. Next placement: Master of Data Science, University of Oxford (UK).
- **Sarah Teague** 2022–2024
Undergraduate, University of Georgia. Project: Applying machine learning and clustering methods to identify underlying classes of protoplanetary discs. Next placement: PhD in Physics, University of North Carolina at Chapel Hill.

AWARDS, RECOGNITIONS AND OUTSTANDING ACHIEVEMENTS OF MENTEES

- **Elaine Gammon** 2024–present
Undergraduate, University of Georgia. Awards: NSF Graduate Research Fellowship Program (April 2025); Barry Goldwater Scholarship (2024); CURO Fellowship (2024).
- **Annie Mehta** 2024–present
Undergraduate, University of Georgia. Award: CURO Fellowship (2024).
- **Juvis MBeng** 2023–present
PhD student, University of Georgia. Awards: Anderson-Pioletti Award (2024); Institute for Artificial Intelligence Research Award (2024).
- **James Sargent** 2021–present
PhD student, University of Georgia. Award: Bill Cummings Award (2024).
- **Jason Terry** 2020–2024
PhD student, University of Georgia. Awards: Anderson-Pioletti Award (2021); SEC Emerging Scholars (2021); Carmon Scholarship (2022); Kirkpatrick Award (2022); Featured in Apple Television Advert (2024).
- **Sarah Teague** 2023–2024
Undergraduate, University of Georgia. Awards: L. L. Hendren Memorial Scholarship (2023); Astrophysics Award (2024).
- **Catherine Schilling** 2021–2023
Undergraduate, University of Georgia. Awards: Wheatley Award (2023); Harvard REU Summer Program (2022); Astrophysics Award (2022).

PUBLIC ENGAGEMENT AND OUTREACH

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- Science on Screen at Cine: Arrival (Panelist) 2026
 - Talk at Georgia Museum of Art “We too, are made of wonders” 2026
 - TEDxUGA Talk: Using AI to Find Hidden Forming Exoplanets 2024
 - Science Night at Barnett Shoals Elementary 2024
 - Horizons Atlanta Star Party 2023
 - Science communicator at 611 RAFAC, UK 2021
 - Delivered talk on “The Birth of Alien Worlds” at Skeptics in the Pub Online, a coalition of UK-based skeptics groups interested in science and data 2021
 - Science communicator (virtually) at Meols Cop High School, Southport, UK 2021
 - Host of “Out in Space” podcast for LGBTQ+ astronomers 2020–present

- Supervised a Nuffield student in Astronomy at University of Leicester 2020
- Supervised work experience student in astronomy at University of Leicester 2019
- Featured on Widdershins Podcast (S1E2, Exoplanets, widdershinspodcast.com) 2019
- Supervised work experience student (University of Leicester) 2019
- Outreach talk at Clifton High School, Bristol, UK 2017
- Office of Lifelong Learning Tutor, University of Edinburgh 2014–2015
- Science communicator at Mosborough Primary School, Sheffield, UK 2011

SELECTED PRESS AND MEDIA COVERAGE

- [Franklin College's Cassandra Hall receives a Cottrell Scholar Award.](#)
- [2026 Cottrell Scholars announced, March 2026](#)
- [UGA's Hall named National Geographic Explorer](#), Mar 2025.
- [There might be more than one way to make a planet](#), The New York Times, Sep 2024.
- [ALMA Detects Hallmark "Wiggle" of Gravitational Instability in Planet-Forming Disk](#) The Kavli Institute for Astronomy and Astrophysics, Peking University, 2024.
- [New research challenges long-standing paradigm on planet formation](#), Franklin College, 2024.
- [3 Questions: Evidence for planetary formation through gravitational instability](#), MIT News, 2024.
- [ALMA Detects Hallmark "Wiggle" of Gravitational Instability in Planet-Forming Disk](#), Institute of Astronomy, Cambridge, 2024.
- [ALMA Detects Hallmark "Wiggle" of Gravitational Instability in Planet-Forming Disk](#), ALMA Press Release, 2024.
- [ALMA Detects Hallmark "Wiggle" of Gravitational Instability in Planet-Forming Disk](#), NRAO Press Release, 2024.
- [Researchers focus AI on finding exoplanets](#), UGA Today, 2023.
- [The New Best Place To Look For Alien Life: The Photosynthetic Habitable Zone](#), Discover Magazine, 2023.
- [A New Definition of Exoplanet Habitability: Introducing the Photosynthetic Habitable Zone](#), astrobiology.com, 2023.
- [A new place to look for alien life: The photosynthetic habitable zone](#), astronomy.com, 2023.
- ["Goldilocks zone" may not be a good metric for whether life exists on exoplanets, say astrobiologists](#), Physics World (Editor's Pick), 2023.
- [Where to Look for Life: Homing in on the Habitable Zone](#), Sky and Telescope, 2023.
- [What Will Plants Be Like on Alien Worlds?](#), Wired, 2023.
- [Apple Advert](#), featuring work from Terry, Hall, Abreau & Gleyzer 2023.
- [Study of Young Chaotic Star System Reveals Planet Formation Secrets](#), National Radio Astronomy Observatory Press Release, 2022.
- [ALMA Observes Deep into Chaotic Planetary Nursery](#), ALMA Observatory Press Release, 2022.
- [GRAVITATIONALLY UNSTABLE DISK MAY COLLAPSE TO FORM PLANETS](#), Sky and Telescope, 2021.
- [Chaotic Young Star System Holds the Key to Planet Formation](#), zmescience, 2021.
- [Young Chaotic Star System Reveals Secrets of Planet Formation](#), SciTechDaily, 2021.

ORGANISATION OF SCIENTIFIC MEETINGS

- The Dynamical & Chemical Connection (Lorentz Center Workshop) 2021
- Protoplanetary Discussions Conference (Edinburgh) 2016

DEPARTMENT AND UNIVERSITY SERVICE

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- American Journal of Physics Resource Letters Editorial Board 2024- Present
 - Franklin College Brand Advisory Group 2023- Present
 - Observatory Director 2023- Present
 - Graduate Preliminary Exam Committee 2022- Present
 - UGA Executive Committee Member 2022- Present
 - UGA Council Member 2021- Present
 - Chair of Committee for Community & Belonging 2020- Present
 - Physics Education Assistant Professor Search Committee 2023
 - Administrative Assistant Search Committee 2022
 - Undergraduate Mentor (University of Leicester) 2019-2020
 - Departmental Equality, Diversity and Inclusivity (EDI) Officer (University of Leicester) 2018-2020
 - Departmental EDI Committee Member (University of Leicester) 2017-2020
 - Departmental Colloquium Organiser (University of Leicester) 2017-2018
 - Computing Representative (University of Edinburgh) 2014-2017

TEACHING ACTIVITIES

I have extensive teaching experience, including work with students from widening participation backgrounds, such as those in care programs or from economically disadvantaged communities. I am deeply committed to expanding educational opportunities for young people.

- **Lilly Teaching Fellow** 2021-2023
University of Georgia. Developed a prototype virtual reality planetarium as capstone project.
- **Course Professor for Introductory Astronomy of the Solar System** 2021-Present
University of Georgia. One of UGA's most popular introductory STEM courses with a typical enrolment of 150–200 students.
- **LEAPS Coordinator for Physics and Astronomy** 2015-2016
University of Edinburgh. Coordinated and scheduled all departmental activities for the Lothian Equal Access Programme for Schools (LEAPS). On completion, students from under-resourced backgrounds matriculated to the University of Edinburgh with lower entry grades than usually required, thereby leveling the playing field.
- **LEAPS Tutor** 2014-2016
University of Edinburgh. Tutored all physics laboratory sessions.
- **Course Instructor for the Office of Lifelong Learning** 2014-2015
University of Edinburgh. Designed and delivered a new adult learning course in astronomy.
- **Teaching Assistant on 12 courses** 2013-2016
University of Edinburgh. Responsibilities included laboratory teaching, tutorials, and course support. Courses included:
 - Physics 1B Lab (2016, 2014)
 - Introductory Astrophysics (2016, 2014)
 - Physics 1A (2015, 2014, 2013)
 - Algebra and Calculus (2015)
 - Electromagnetism (2015)
 - Physics 1B Tutorial (2015; received multiple nominations for Best Tutor)
 - Discovering Astronomy (2014)
 - Modern Physics (2014)

PEER REVIEW

- American Journal of Physics Resource Letters Editorial Board
- Panelist for the NASA Hubble Fellows Program.
- Reviewer for *Monthly Notices of the Royal Astronomical Society*
- Reviewer for *Nature Astronomy*
- Reviewer for the U.K.'s supercomputing infrastructure designed to support the theory community (DiRAC)
- Reviewer for research grants at ETH Zurich
- Reviewer for German Research Foundation
- Reviewer for the Dorothy Hodgkins Fellowship

PUBLICATIONS

A full list of publications is available at the following library on the NASA Astrophysics Data System: [docs\(library/RgVJxBh3Tr6pXbX2qMUdWg\)](https://docs.library/RgVJxBh3Tr6pXbX2qMUdWg). Asterisks (*) indicate work lead by an advisee.

Peer-Reviewed

63. Murray, M. H., **Hall, C.**, Baehr, H., & Terry, J. P. (2026). *Dust morphology under changing dust mass ratios in protoplanetary discs*, MNRAS(2), 547, 1-14.
62. Cui, K., Xiao, G.-Y., Feng, F., Liu, B., Nayakshin, S., **Hall, C.**, et al. (2026). *A universal brown dwarf desert formed between planets and stars*, PNAS, 123(9), e2524764123.
61. Hardiman, C., Pinte, C., Price, D. J., Hilder, T., Hammond, I., Danilovich, T., Andrews, S. M., Teague, R., Rosotti, G., Flock, M., Cataldi, G., Bae, J., Barraza-Alfaro, M., Benisty, M., Cuello, N., Curone, P., Czekala, I., Facchini, S., Fasano, D., Fukagawa, M., Galloway-Sprietsma, M., Garg, H., **Hall, C.**, et al. (2026). *exoALMA. XIX. Confirmation of Non-thermal Line Broadening in the DM Tau Protoplanetary Disk*, ApJL, 997(2), L47.
60. Baehr, H., Rice, K., Yang, C.-C., & **Hall, C.** (2025). *On the Gravitational Collapse of Small Dust Grains in Self-gravitating Disk Structures*, ApJ, 995(1), 39.
59. Carrera, D., Davenport, A., Simon, J. B., Baehr, H., Birnstiel, T., **Hall, C.**, et al. (2025). *Turbulence Inhibits Planetesimal Formation in Class 0/I Disks Subject to Infall*, ApJ, 990(1), 39.
58. Zagaria, F., Jiang, H., Cataldi, G., Facchini, S., Benisty, M., Aikawa, Y., Andrews, S., Bae, J., Barraza-Alfaro, M., Curone, P., Czekala, I., Fasano, D., **Hall, C.**, et al. (2025). *SO Emission in the Dynamically Perturbed Protoplanetary Disks around CQ Tau and MWC 758*, ApJ, 989(1), 30.
57. Winter, A. J., Benisty, M., Izquierdo, A. F., Lodato, G., Teague, R., Kimmig, C. N., Andrews, S. M., Bae, J., Barraza-Alfaro, M., Cuello, N., Curone, P., Czekala, I., Facchini, S., Fasano, D., **Hall, C.**, et al. (2025). *exoALMA. XVIII. Interpreting Large-scale Kinematic Structures as Moderate Warping*, ApJL, 990(1), L10.
56. Rice, K., Baehr, H., Young, A. K., Booth, R., Rowther, S., Meru, F., **Hall, C.**, & Koval, A. (2025). *Dust density enhancements and the direct formation of planetary cores in gravitationally unstable discs*, MNRAS, 539(4), 3421–3435.
55. Rauer, H., Aerts, C., Cabrera, J., Deleuil, M., Erikson, A., Gizon, L., Goupil, M., Heras, A., Walloschek, T., Lorenzo-Alvarez, J., Marliani, F., Martin-Garcia, C., Mas-Hesse, J. M., O'Rourke, L., Osborn, H., Pagano, I., Piotto, G., Pollacco, D., Ragazzoni, R., Ramsay, G., Udry, S., Appourchaux, T., Benz, W., Brandeker, A., Güdel, M., Janot-Pacheco, E., Kabath, P., Kjeldsen, H., Min, M., Santos, N., Smith, A., Suarez, J.-C., Werner, S. C., ... **Hall, C.**, et al. (2025). *The PLATO mission*, Experimental Astronomy, 59(3), 26.
54. Wölfer, L., Barraza-Alfaro, M., Teague, R., Curone, P., Benisty, M., Fukagawa, M., Bae, J., Cataldi, G., Czekala, I., Facchini, S., Fasano, D., Flock, M., Galloway-Sprietsma, M., Garg, H., **Hall, C.**, et al. (2025). *exoALMA. XVII. Characterizing the Gas Dynamics around Dust Asymmetries*, ApJL, 984(1), L22.
53. Barraza-Alfaro, M., Flock, M., Béthune, W., Teague, R., Bae, J., Benisty, M., Cataldi, G., Curone, P., Czekala, I., Facchini, S., Fasano, D., Fukagawa, M., Galloway-Sprietsma, M., Garg, H., **Hall, C.**, et al. (2025). *exoALMA. XVI. Predicting Signatures of Large-scale Turbulence in Protoplanetary Disks*, ApJL, 984(1), L21.
52. Rosotti, G. P., Longarini, C., Paneque-Carreño, T., Cataldi, G., Galloway-Sprietsma, M., Andrews, S. M., Bae, J., Barraza-Alfaro, M., Benisty, M., Curone, P., Czekala, I., Facchini, S., Fasano, D., Flock, M., Fukagawa, M., Garg, H., **Hall, C.**, et al. (2025). *exoALMA. XV. Interpreting the Height of CO Emission Layer*, ApJL, 984(1), L20.

51. Yoshida, T. C., Curone, P., Stadler, J., Facchini, S., Teague, R., Momose, M., Andrews, S. M., Bae, J., Barraza-Alfaro, M., Benisty, M., Cataldi, G., Fasano, D., Flock, M., Fukagawa, M., Galloway-Sprietsma, M., Garg, H., **Hall, C.**, et al. (2025). *exoALMA. XIV. Gas Surface Densities in the RX J1604.3-2130 A Disk from Pressure-broadened CO Line Wings*, ApJL, 984(1), L19.
50. Trapman, L., Longarini, C., Rosotti, G. P., Andrews, S. M., Bae, J., Barraza-Alfaro, M., Benisty, M., Cataldi, G., Curone, P., Czekala, I., Facchini, S., Fasano, D., Flock, M., Fukagawa, M., Galloway-Sprietsma, M., Garg, H., **Hall, C.**, et al. (2025). *exoALMA. XIII. Gas Masses from N_2H^+ and $C^{18}O$: A Comparison of Measurement Techniques for Protoplanetary Gas Disk Masses*, ApJL, 984(1), L18.
49. Longarini, C., Lodato, G., Rosotti, G., Andrews, S., Winter, A., Stadler, J., Izquierdo, A., Galloway-Sprietsma, M., Facchini, S., Curone, P., Benisty, M., Teague, R., Bae, J., Barraza-Alfaro, M., Cataldi, G., Czekala, I., Cuello, N., Fasano, D., Flock, M., Fukagawa, M., Garg, H., **Hall, C.**, et al. (2025). *exoALMA. XII. Weighing and Sizing *exoALMA* Disks with Rotation Curve Modelling*, ApJL, 984(1), L17.
48. Gardner, C. H., Isella, A., Li, H., Li, S., Bae, J., Barraza-Alfaro, M., Benisty, M., Cataldi, G., Curone, P., Eisner, J. A., Facchini, S., Fasano, D., Flock, M., Follette, K. B., Fukagawa, M., Galloway-Sprietsma, M., Garg, H., **Hall, C.**, et al. (2025). *exoALMA. XI. ALMA Observations and Hydrodynamic Models of LkCa 15*, ApJL, 984(1), L16.
47. Pinte, C., Ilee, J. D., Huang, J., Benisty, M., Facchini, S., Fukagawa, M., Teague, R., Bae, J., Barraza-Alfaro, M., Cataldi, G., Cuello, N., Curone, P., Czekala, I., Fasano, D., Flock, M., Galloway-Sprietsma, M., Garg, H., **Hall, C.**, et al. (2025). *exoALMA. X. Channel Maps Reveal Complex ^{12}CO Abundance Distributions*, ApJL, 984(1), L15.
46. Zawadzki, B., Czekala, I., Galloway-Sprietsma, M., Bae, J., Barraza-Alfaro, M., Benisty, M., Cataldi, G., Curone, P., Facchini, S., Fasano, D., Flock, M., Fukagawa, M., Garg, H., **Hall, C.**, et al. (2025). *exoALMA. IX. Regularized Maximum Likelihood Imaging of Non-Keplerian Features*, ApJL, 984(1), L14.
45. Hilder, T., Casey, A. R., Price, D. J., Pinte, C., Izquierdo, A. F., Hardiman, C., Bae, J., Barraza-Alfaro, M., Benisty, M., Cataldi, G., Curone, P., Czekala, I., Facchini, S., Fasano, D., Flock, M., Fukagawa, M., Galloway-Sprietsma, M., Garg, H., **Hall, C.**, et al. (2025). *exoALMA. VIII. Probabilistic Moment Maps and Data Products*, ApJL, 984(1), L13.
44. Bae, J., Flock, M., Izquierdo, A., Kanagawa, K., Ono, T., Pinte, C., Price, D. J., Rosotti, G. P., Wafflard-Fernandez, G., Lesur, G., Masset, F., Andrews, S. M., Barraza-Alfaro, M., Benisty, M., Cataldi, G., Cuello, N., Curone, P., Czekala, I., Facchini, S., Fasano, D., Galloway-Sprietsma, M., **Hall, C.**, et al. (2025). *exoALMA. VII. Benchmarking Hydrodynamics and Radiative Transfer Codes*, ApJL, 984(1), L12.
43. Stadler, J., Benisty, M., Winter, A. J., Izquierdo, A. F., Longarini, C., Galloway-Sprietsma, M., Curone, P., Andrews, S. M., Bae, J., Facchini, S., Rosotti, G., Teague, R., Barraza-Alfaro, M., Cataldi, G., Cuello, N., Czekala, I., Fasano, D., Flock, M., Fukagawa, M., Garg, H., **Hall, C.**, et al. (2025). *exoALMA. VI. Rotating under Pressure*, ApJL, 984(1), L11.
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Other works:

1. Disk Dynamics Collaboration, Armitage P. J., Bae J., Benisty M., Bergin E. A., Casassus S., Czekala I., Facchini S., Fung J., **Hall C.**, et al., *Visualizing the kinematics of planet formation*.

White papers

1. Planet formation with SKA - The Science Case for Beyond Band 5.
2. "Planet formation – The case for large efforts on the computational side" Astro 2020 Science White Paper. arxiv.org/abs/1903.04546

CONFERENCE PRESENTATIONS, COLLOQUIA AND SEMINARS

Planned:

1. **July 2027**: *2027 Gordon Conference on the Origins of Solar Systems*: Invited talk and discussion leader.

Past:

60. **July 2026**: *Discs on the Exe*: Contributed Poster.
59. **July 2026**: *Discs on the Exe*: Contributed Poster.
58. **June 2026**: *3rd PFITS+ Meeting on Hydrodynamics of Circumstellar Disks and Planet Formation*: Invited talk and discussion chair.
57. **May 2026**: *Peach and Palmetto Workshop at Clemson*: Invited talk.
56. **March 2026**: *UK Exoplanet Meeting 2026*: Contributed pop up talk and poster.
55. **February 2026**: *Georgia State University*: Invited departmental colloquium.
54. **October 2025**: *Clemson University*: Invited departmental colloquium.
53. **March 2025**: *Machine Learning in Planetary System Dynamics Workshop at the Center for Computational Astrophysics*: Contributed talk: Detecting Kinematic Evidence of Gravitational Instability.
52. **March 2025**: *UK Exoplanet Meeting 2025*: Contributed talk: Detecting Kinematic Evidence of Gravitational Instability.
51. **February 2025**: *University of Alabama*: Invited departmental colloquium.
50. **November 2024**: *New Mexico State University*: Invited departmental colloquium.
49. **July 2024**: *U.K. National Astronomy Meeting*: Contributed talk on Detecting Hidden Forming Exoplanets Using Artificial Intelligence.
48. **April 2024**: Invited review talk on protoplanetary disks at The American Physical Society's April Meeting 2024: Quarks to Cosmos.
47. **March 2024**: Invited colloquium at Smithsonian National Air and Space Museum.
46. **Jan 2024**: *AAS 243*. Invited talk: Detecting Hidden Forming Exoplanets Using Artificial Intelligence.
45. **October 2023**: *Carnegie Science: Earth & Planets Laboratory*. Invited departmental colloquium.
44. **October 2023**: *AI/ML in Physics 2023: Revolutionizing Physics: Exploring Connections between Physics and Machine Learning*. Invited review talk on using AI to detect hidden forming exoplanets.
43. **August 2023**: *UK Exoplanet Meeting*. Presented a poster on detecting gravitational instability kinematically.
42. **July 2023**: *UK National Astronomy Meeting*. Invited review talk on protoplanetary discs.

41. **June 2023:** *AAS 242, June 2023*. Contributed talk: A New Definition of Exoplanet Habitability: Introducing the Photosynthetic Habitable Zone.
40. **Oct 2022:** *Center for Computational Astrophysics, Flatiron Institute*. Invited colloquium on gravitational instability and planet formation
39. **May 2022:** *University of Sheffield*. Invited colloquium on gravitational instability and planet formation
38. **May 2022:** *University of California San Diego*. Invited colloquium on planet formation.
37. **January 2022:** *Max Planck Insitute*. Invited on planet formation.
36. **December 2021:** *Flatiron institute* . Invited review talk at invitation-only workshop, radiatively efficient accretion in astrophysics.
35. **December 2021:** *Royal Astronomical Society*. Prize talk at Royal Astronomical Society's ordinary meeting.
34. **November 2021** *88th Annual Meeting of the Southeastern Section of the American Physical Society*. Invited review talk for exoplanets session.
33. **July 2021:** *European Astronomical Society Annual Meeting*. Invited to give review talk on special session on streamers. (I had to cancel due to COVID-19 issues).
32. **April 2021:** *European Astrobiology Institute*. Invited to give review talk on protoplanetary discs and gravitational instability.
31. **November 2020:** *University of Bern*. Invited to give departmental colloquium.
30. **September 2020:** *ETH Zurich*. Invited to give departmental colloquium.
29. **February 2020:** *University of Massachussettes, Amherst*. Invited to give departmental colloquium.
28. **27 November 2019:** *University of Exeter, UK*. Invited to give departmental colloquium.
27. **October 2019:** *Vizualizing the Kinematics of Planet Formation, CCA Flatiron, NY, USA*. Invited to workshop as expert of planet formation.
26. **April 2019:** *The University of Central Lancashire, UK*. Invited to give departmental colloquium.
25. **March 2019:** *Queen Mary University of London, UK*. Invited to give departmental colloquium.
24. **March 2019:** *Imperial College London, UK*. Invited to give departmental colloquium.
23. **Setptember 2018:** *Wonders of Star Formation, Edinburgh, UK*. Presented work on signatures of grain growth in self-gravitating discs.
22. **June 2018:** *University of Warwick* Invited to give departmental colloquium.
21. **April 2018:** *UK Community Exoplanet Community Meeting, University of Oxford, UK (UKEXOM18)*. Presented work on whether the observed morphology of Elias 2-27 could be due to gravitational instability.
20. **May 2018:** *University of Hertfordshire, U.K.* Invited to give departmental colloquium.
19. **March 2018:** *Steward Observatory, Arizona*. Invited to give departmental colloquium.
18. **March 2018:** *Star and Planet Formation 2, Oracle, USA*. Presented work on potentially observing gravitational instability in observed systems.
17. **March 2018:** *Cambridge, UK*. Invited to give the exoplanets and protoplanetary discs group seminar.

16. **December 2017:** *Exoplanets and Planet formation, Shanghai, China.* Presented a poster on disc fragmentation and subsequent evolution in the largest suite of full 3D hydrodynamical simulations done to date in the area.
15. **November 2017:** *Numerical Simulations of Planets in Discs, UNAM Cuernavaca, Mexico.* Invited to give talk about synthetic imaging to the theoretical community.
14. **September 2017:** *University of Sheffield.* Invited to give departmental colloquium.
13. **July 2017:** *Disc Instabilities Across Cosmic Scales, SEXTEN Center for Astrophysics, Italy.* Poster and talk on my research into objects formed by gravitational instability in protostellar discs.
12. **May 2017:** *The Disc Migration Issue: From Protoplanets to Supermassive Black Holes, Cambridge.* Presented a poster and a pop-up talk on my work, currently in press, on characterising exoplanets and brown dwarfs that form through gravitational instability in protostellar discs.
11. **March 2017:** *Formation and Dynamical Evolution of Exoplanets, Aspen Center for Physics, USA.* Presented a poster of my research on fragmenting protostellar discs, and discussed with the community the difficulty of producing population synthesis models of exoplanets formed through the gravitational instability.
10. **March 2017:** *UK Community Exoplanet Community Meeting, St Andrews, UK (UKEXOM17).* Presented a poster of my most recent research on the identification and characterisation of fragments in protostellar discs.
9. **September 2016:** *Young European Radio Astronomers Conference, Bonn, Germany.* Gave a talk on the issues surrounding the direct observation of self-gravitating protostellar discs.
8. **April 2016:** *UK Community Exoplanet Community Meeting, Exeter, UK.* Poster of most recent research on semi-analytic models, combined with synthetic imaging in order to study a large area of parameter space in a computationally efficient manner.
7. **March 2016:** *Protoplanetary Discussions, Edinburgh, UK.* Poster of most recent research on semi-analytic models.
6. **February 2016:** *Exoplanets and Disks: Their Formation and Diversity III, Ishigaki, Japan.* Talk on numerical models and synthetic imaging.
5. **November 2015:** *SUPA Cormack, Royal Society, Edinburgh, UK.* Talk on combining synthetic images with analytical models.
4. **September 2015:** *Scottish Exoplanet and Brown Dwarf Meeting, Royal Observatory, Edinburgh.* Talk on my preliminary work combining semi-analytic models with synthetic imaging.
3. **July 2015:** *NASA Exoplanet Science Institute Carl Sagan Workshop, California Institute of Technology, USA.* Poster of most recent work in analytical disc models.
2. **March 2015:** *UK Community Exoplanet Community Meeting, Warwick, UK (UKEXOM16).* Poster of most recent work in analytical disc models.
1. **June 2014:** *International HPC Summer School on HPC Challenges in Computational Sciences, Budapest, Hungary.* Presented an “interactive poster” talk on my current research in SPH simulations.

References

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Appendix: Winton Award Citation

The full citation of the Royal Astronomical Society's Winton Award is copied below:

“Dr. Cassandra Hall’s research is focused on the earliest stages of star and planet formation. In her PhD, Dr Hall used theoretical models and synthetic imaging techniques to identify observational signatures of gravitational instabilities in discs around young stars. Since completing her PhD in 2017, she has significantly extended her research, taking a broader view of planets and their formation, exploring disc- planet interactions and considering the observable signatures of young planets.

Dr Hall currently holds a tenure-track position as an assistant professor at the University of Georgia, USA, where she is building a new research group. Her current research combines state-of-the-art numerical hydrodynamics and detailed radiative transfer modelling with sophisticated synthetic observations, and is already yielding important new insights into the planet formation process.

Dr. Hall’s numerical models have played a leading role in the development of the science case to extend the functionality of the Square Kilometre Array (SKA) to allow it to place constraints on the distribution and morphology of the raw material for building planets. By connecting the theory of protoplanetary discs to observations, Dr Hall is building a distinctive research programme at the forefront of the quest to understand how planets form. For these reasons Dr Cassandra Hall is awarded the Winton Award.