Ruth Angus | Curriculum Vitae

rangus@amnh.org

Curator and Professor of Astronomy at the American Museum of Natural History and the Flatiron Institute, specializing in data-driven stellar astrophysics.

Academic Appointments

- October 2018 - Present: Assistant Curator, Department of Astrophysics, American Museum of Natural History, Central Park West & 79th St, New York, NY 10024.
- October 2018 - Present: Associate Research Scientist, Center for Computational Astrophysics, Flatiron Institute, 162 5th Avenue, New York, NY, 10010.
- October 2018 - Present: Adjunct Professor, Department of Astronomy, Columbia University, Pupin Hall, New York, NY, 10027.
- October 2016 - October 2018: Simons Junior Postdoctoral Fellow, Department of Astronomy, Columbia University, 550 W 120th St, New York, NY 10027.

Education

- DPhil (PhD) June 2016, Subdepartment of Astrophysics, University of Oxford. Advisor: Professor Suzanne Aigrain.
- Predoctoral fellowship 2015, Harvard-Smithsonian Center for Astrophysics. Advisor: Professor John Asher Johnson.
- MPhys Physics with Astrophysics 2012, Department of Physics, University of Southampton, UK. Advisor: Dr David Latham (Harvard-Smithsonian Center for Astrophysics).

Grants

Awarded as PI

- *Stellar rotation and gyrochronology of cool stars*, selected 2020, NASA ADAP award, $500,000.
- *Measuring long rotation periods from TESS light curves*, awarded June 2020, NASA TESS Guest Investigator program, Cycle 3, $200,000.
- *Measuring long rotation periods from TESS's short light curves*, awarded June 2019, NASA TESS Guest Investigator program, Cycle 2, $200,000.

Awarded as Senior Personnel

- *The Evolution Of Dust And Debris Around Sun-Like Stars*, Science PI: Trevor David, Administrative PI: Ruth Angus, awarded May 2019, NASA TESS Guest Investigator program, Cycle 2, $100,000.
- *Planetary Archaeology: Exploring The Planet Population Around Evolved Stars With TESS*, PI: Samuel Grunblatt, Co-I: Ruth Angus, awarded May 2019, NASA TESS Guest Investigator program, Cycle 2, $50,000.

Service

- 2017-present: Review panel member for the Manhattan Theater Club/Sloan Foundation play commission.
- 2020-present: Review panel member for the Sloan Foundation Book program.
- 2020-present: Secretary of the Scientific Senate Committee, AMNH.
- 2020-present: Member of the Executive Committee of the Scientific Senate, AMNH.

- 2020-present: Member of the Exhibitions Committee of the Scientific Senate, AMNH.
- 2019-present: Member of the Academic Affairs and Fellowships Committee, AMNH.
- 2015-present: Active referee for AAS journals, Monthly Notices of the Royal Astronomical Society, and The Journal of Open Source Software.
- 2020: Member of the Columbia Graduate Admissions Committee.
- 2019: Juror for the Sloan Foundation Science Award at the Sundance Film Festival.

Recent and Upcoming Talks

- *The Ages and Rotation Periods of Cool Stars*, Invited talk, TESS Science Conference, August 2021.
- *Kinematic Ages for Cool Stars*, Invited talk, DDA meeting, Summer AAS, May 2021.
- *Measuring the Ages of Ancient Worlds*, Public lecture, AMNH SciCafe, May 2021.
- *The Stellar Revolution: Unlocking Stellar Ages in the Era of Time-Domain Astronomy*, Colloquium, Keele University, February 2021.
- *Stellar Ages and Stellar Rotation*, CCA lunch talk, Flatiron Institute, November 2020.
- Public lecture, Astronomy On Tap: Kingston, September 2020.
- Public lecture, Astronomy Society of Long Island, November 2020.
- Public lecture, American Astronomical Association, December 2020.
- *KITP Reunion Conference: Better Stars, Better Planets*, Invited Talk, August, 2020.
- *Scientists at home: Imagining Space Exploration* Online public talk, May 2020: https://www.facebook.com/naturalhistory/videos/297028201320722
- *Science with TESS and Sphere-X*, Invited talk, Sphere-X meeting, Flatiron Institute, New York, February 2020.
- *Combining information from multiple observations and models*, Invited talk, PLATO workshop, Barcelona, Spain, November, 2019.
- *The ages of planet hosts*, ITC Colloquium, Harvard University, Cambridge, MA, October, 2019.
- *Hierarchical Bayesian Modeling*, Tutorial, LSST summer school, Flatiron Institute, NY, NY, September, 2019.
- *Measuring stellar ages from light curves*, Invited talk, Planet-Star Connections in the Era of TESS and Gaia, Kavli Institute for Theoretical Physics, UCSB, Santa Barbara, CA, May 2019.
- *Stellar rotation and activity in clusters and the field*, Invited talk, the 10th anniversary Kepler Science Meeting, LA, March 2019.
- *Planetary systems across time and space*, Physics Colloquium, Stony Brook University, Stony Brook NY, February 2019.
- *Measurements of time in astronomy*, Simon Foundation Public Lecture, New York, NY, February 2019.

Teaching

Student advisees:

- Yuxi (Lucy) Lu, Graduate Student, Columbia University
- Daniel Yahalomi, Graduate Student, Columbia University
- Danielle Rowland, Postbaccalaureate Fellow, AMNH

- Soichiro Hattori, Research Assistant, AMNH

Postdoctoral advisees:

- 2021-2023 Isabel Colman, Postdoctoral Researcher, AMNH
- 2020-2023: Joel Zinn, NSF Postdoctoral Fellow, AMNH
- 2020: Jason Curtis, Postdoctoral Researcher, AMNH
- 2019-2022: Samuel Grunblatt, RGGS Postdoctoral Fellow, AMNH
- 2019-2022: Trevor David, Flatiron Research Fellow, Flatiron Institute

Thesis committee member for:

- Moiya McTier, Columbia University
- Rocio Kiman, CUNY
- Mark Popinchalk, CUNY
- Tiffany Jansen, Columbia University

Publications

Total: 35 / refereed: 25 / citations: 1209 / h-index: 11 (2021-04-28)

Refereed Publications:

1. Rocio Kiman, Jacqueline K. Faherty, Kelle L. Cruz, Jonathan Gagne, **Ruth Angus**, Siyi Xu, Sarah J. Schmidt, Sarah Casewell, Andrew Mann, Daniella Bardalez Gagliuffi, Emily Rice, *'Calibration of the H-alpha Age-Activity relation for M dwarfs'*, accepted for publication in the Astronomical Journal.

2. Mark Popinchalk, Jackie Faherty, Rocio Kiman, **Ruth Angus**, Jason Curtis, Jonathan Gagne, Kelle Cruz, Emily Rice, *'Evaluating Rotation Periods of M dwarfs'*, accepted for publication in the Astrophysical Journal, arXiv:2105.05935

3. Trevor J. David, Gabriella Contardo, Angeli Sandoval, **Ruth Angus**, Yuxi (Lucy) Lu, Megan Bedell, Jason L. Curtis, Daniel Foreman-Mackey, Benjamin J. Fulton, Samuel K. Grunblatt, Erik A. Petigura, *'Small Planet Sizes Evolve Over Billions of Years'*, 2021, The Astronomical Journal, 161, 265, arXiv:2011.09894

4. Yuxi (Lucy) Lu, **Ruth Angus**, Jason L. Curtis, Trevor J. David, and Rocio Kiman, *Gyro-Kinematic Ages for around 30,000 Kepler Stars*, 2021, The Astronomical Journal, 160, 168, arXiv:2102.01772

5. Spencer A. Hurt, Samuel N. Quinn, David W. Latham, Andrew Vanderburg, Gilbert A. Esquerdo, Michael L. Calkins, Perry Berlind, **Ruth Angus**, Christian A. Latham and George Zhou, *A decade of radial-velocity monitoring of Vega and new limits on the presence of planets*, 2021, The Astronomical Journal, 161, 157, arXiv:2101.08801

6. Caroline Piaulet, & others including **Ruth Angus**, *WASP-107b's density is even lower: a case study for the physics of planetary gas envelope accretion and orbital migration*, 2021, The Astronomical Journal, 161, 70, arXiv:2011.13444

7. Yuxi (Lucy) Lu, **Ruth Angus**, Marcel Agueros, Kirsten Blancato, Melissa Ness, Danielle Rowland, Jason L. Curtis, Sam Grunblatt, *Astraea: Predicting Long*

Rotation Periods of TESS Stars with 27-Day Light Curves, 2020, The Astronomical Journal, 160, 168, arXiv:2008.03351

8. **Ruth Angus**, Angus Beane, Adrian M. Price-Whelan, Elisabeth Newton, Jason L. Curtis, Travis Berger, Jennifer van Saders, Rocio Kiman, Daniel Foreman-Mackey, Yuxi Lu, Lauren Anderson, Jacqueline K. Faherty, *Exploring the evolution of stellar rotation using Galactic kinematics*, 2020, The Astronomical Journal, 160, 90, arXiv:2005.09387

9. Jason Lee Curtis, & others including **Ruth Angus**, *When Do Stalled Stars Resume Spinning Down? Advancing Gyrochronology with Ruprecht 147*, 2020, The Astrophysical Journal, 904, 140, arXiv:2010.02272

10. Kirsten Blancato, Melissa Ness, Daniel Huber, Yuxi (Lucy) Lu and **Ruth Angus**, 'Data-driven derivation of stellar properties from photometric time series data using convolutional neural networks', submitted to The Astronomical Journal, arXiv:2005.09682

11. Teachey, A., Kipping, D., Burke, C. J., **Angus, R.**; Howard, A. W., "Loose Ends for the Exomoon Candidate Host Kepler-1625b", 2020, The Astronomical Journal, 159, 142, arXiv:1904.11896

12. Kiman, R., Schmidt, S. J., **Angus, R.**; Cruz, K. L., Faherty, J. K.; Rice, E., *Exploring the age dependent properties of M and L dwarfs using Gaia and SDSS*, 2019, The Astronomical Journal, 157, 231, arXiv:1904.05911

13. **Angus, R**, Morton, T. D., Foreman-Mackey, D., van Saders, J., Curtis, J., Kane, S. R., Bedell, M., Kiman, R, Hogg, D. W. & Brewer, J., *Towards precise stellar ages: combining isochrone fitting with empirical gyrochronology*, 2019, The Astronomical Journal, 158, 173, arXiv:1908.07528

14. **Angus, R**; Morton, T. D., Foreman-Mackey, D., *stardate: Combining dating methods for better stellar ages*, 2019, Journal of Open Source Software, 4, 1469

15. Morris, B. & others including **Angus, R.**, *The Solar Benchmark: Rotational Modulation of the Sun Reconstructed from Archival Sunspot Records*, 2019, Monthly Notices of the Royal Astronomical Society, 484, 3244, arXiv:1901.04557

16. Ness, M. K. & others including **Angus, R.**, *Inference of stellar parameters from brightness variations*, 2019, The Astrophysical Journal, 866, 15, arXiv:1805.04519

17. **Angus, R.**, Morton, T., Aigrain, S., Foreman-Mackey, D., Rajpaul, V., *Inferring probabilistic stellar rotation periods using Gaussian processes*, 2018, Monthly Notices of the Royal Astronomical Society 474, 2094, arXiv:1706.05459

18. Foreman-Mackey, D., Agol, E., Ambikasaran, S., & **Angus, R.**, *Fast and scalable Gaussian process modeling with applications to astronomical time series*, 2018, The Astrophysical Journal, 154, 220, arXiv:1703.09710

19. **Angus, R.** & Kipping, D. *Probabilistic Inference of Basic Stellar Parameters: Application to Flickering Stars*, 2016, The Astrophysical Journal Letters, 823, 9, arXiv:1607.00874

20. **Angus, R.**, Foreman-Mackey, D., Johnson, A., J., *Systematics-insensitive Periodic Signal Search with K2*, 2016, The Astrophysical Journal, 818, 109, arXiv:1505.07105

21. **Angus, R.**, Aigrain, S., Foreman-Mackey, D., McQuillan, A., *Calibrating Gyrochronology using Kepler Asteroseismic Targets*, 2015, Monthly Notices of the Royal Astronomical Society, 225, 112, arXiv:1502.06965

22. Vanderburg, A., & others including **Angus, R.**, *A disintegrating minor planet transiting a white dwarf*, 2015, Nature, 526, 546, arXiv:1510.06387

23. Vanderburg, A., & others including **Angus, R.**, *Characterizing K2 Planet Discoveries: A Super-Earth Transiting the Bright K Dwarf HIP 116454*, 2015, The Astrophysical Journal, 800, 59, arXiv:1412.5674

24. Parviainen, H., & others including **Angus, R.**, *Transiting exoplanets from the CoRoT space mission. XXV. CoRoT-27b: a massive and dense planet on a short-period orbit*, 2014, Astronomy & Astrophysics, 562, 140, arXiv:1401.1122

25. Coe, M. J., **Angus, R.**, Orosz, J. A., Udalski, A., *A detailed study of the modulation of the optical light from Sk160/SMC X-1*, 2013, Monthly Notices of the Royal Astronomical Society, 433, 746, arXiv:1305.0439

Non-Refereed Publications:

26. David V. Martin, Kareem El-Badry, Vedad Kunovac Hodzic, Amaury H. M. J. Triaud, **Ruth Angus**, Jessica Birky, Daniel Foreman-Mackey, Christina Hedges, Benjamin T. Montet, Simon J. Murphy, Alexandre Santerne, Keivan G. Stassun, Alexander P. Stephan, Ji Wang, Paul Benni, Vadim Krushinsky, Nikita Chazov, Nikolay Mishevskiy, Carl Ziegler, Abderahmane Soubkiou, Zouhair Benkhaldoun, Douglas A. Caldwell, Karen Collins, Christopher E. Henze, Natalia M. Guerrero, Jon M. Jenkins, David W. Latham, Adam Levine, Scott McDermott, Susan E. Mullally, George Ricker, Sara Seager, Avi Shporer, Andrew Vanderburg, Roland Vanderspek, Joshua N. Winn, *'TOI-1259Ab – a gas giant planet with 2.7% deep transits and a bound white dwarf companion'*, submitted to MNRAS, December 2020, arXiv:2101.02707

27. Tyler A. Gordon, James R. A. Davenport, **Ruth Angus**, Daniel Foreman-Mackey, Eric Agol, Kevin R. Covey, Marcel Agüeros, and David Kipping *Stellar Rotation in the K2 Sample: Evidence for Broken Spindown*, Submitted to The Astronomical Journal, arXiv:2101.07886

28. Hedges, Christina, **Angus, Ruth**, Barentsen, Geert, Saunders, Nicholas, Montet, Benjamin T., Gully-Santiago, Michael, *Systematics-insensitive Periodogram for Finding Periods in TESS Observations of Long-period Rotators*, 2020, Research Notes of the American Astronomical Society, 4, 220, arXiv:2012.08972

29. LSST Science Collaboration & others, including **Angus, R.**, *Science-Driven Optimization of the LSST Observing Strategy*, 2017, arXiv:1708.04058

30. Najita, J., & others, including **Angus, R.**, *Maximizing Science in the Era of LSST: A Community-Based Study of Needed US Capabilities*, 2016, arXiv:1610.01661

31. Hawley, S. L., **Angus, R.**, Buzasi, D., Davenport, J., R., A., Giampapa, M., Kashyap, V., Meibom, S., *Maximizing Science in the Era of LSST, Stars Study Group Report: Rotation and Magnetic Activity in the Galactic Field Population and in Open Star Clusters*, 2016, arxiv:1607.04302

32. Aigrain, Suzanne, **Angus, R.**, Barstow, J., Rajpaul, V., Gillen, E., Parviainen, H., Pope, B., Roberts, S., McQuillan, A., Gibson, N., Mazeh, T., Pont, F., Zucker, S., *The Effects Of Stellar Activity On Detecting And Characterising Planets*, 2016, The 19th Cambridge Workshop on Cool Stars, Stellar Systems, and the Sun, DOI: 10.5281/zenodo.154565

33. Aigrain, S., & others including **Angus, R.**, *Monitoring young associations and open clusters with Kepler in two-wheel mode*, 2013, arxiv:1309.0737

34. Montet, B. T., & others including **Angus, R.**, *Maximizing Kepler science return per telemetered pixel: Searching the habitable zones of the brightest stars*, 2013, arxiv:1309.0654

35. Hogg, D., W., & others including **Angus, R.**, *Maximizing Kepler science return per telemetered pixel: Detailed models of the focal plane in the two-wheel era*, 2013, arxiv:1309.0653