

Ruth Angus | Curriculum Vitae

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I am a Curator and Professor of Astrophysics at the American Museum of Natural History, an Associate Research Scientist at the Flatiron Institute's Center for Computational Astrophysics, and an Adjunct Professor of Astronomy at Columbia University. I study the evolution of the stars and planets in our Milky Way Galaxy using 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*, awarded April 2021, NASA ADAP, \$530,000.
- *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

- *Planetary Archaeology: Exploring The Planet Population Around Evolved Stars With TESS*, PI: Samuel Grunblatt, Co-I: Ruth Angus, awarded May 2021, NASA TESS Guest Investigator program, Cycle 4, \$50,000.
- *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.
- 2018-present: Member of the Flatiron Research Fellow admissions committee.
- 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.
- 2020: Member of the Columbia Graduate Admissions Committee.
- 2019: Juror for the Sloan Foundation Science Award at the Sundance Film Festival.
- 2015-present: Active referee for AAS journals, Monthly Notices of the Royal Astronomical Society, and The Journal of Open Source Software.

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, 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.
- *Calibrating gyrochronology using kinematics*, Contributed Talk, AAS Winter Meeting, January 2020.
- *Stellar Ages and Stellar Rotation*, CCA lunch talk, Flatiron Institute, November 2020.
- *Measuring the ages of stars*, Public lecture, Astronomy On Tap: Kingston, September 2020.
- *Measuring the ages of stars*, Public lecture, Astronomy Society of Long Island, November 2020.
- *The Ages of Alien Worlds*, 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.

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: 36 / Refereed: 25 / Citations: 1302 / h-index: 12 (2021-07-28)

Refereed Publications:

1. 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'*, MNRAS, December 2020, arXiv:2101.02707
2. 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*, The Astronomical Journal, arXiv:2101.07886
3. S. Grunblatt, J. C. Zinn, A. Price-Whelan, E. Bellinger, N. Saunders, S. Martell, R. Angus, D. Huber, *'Ages for Red Giant Stars Associated with Stellar Halo Substructures'*, The Astronomical Journal, arXiv:2105.10505.
4. 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'*, The Astronomical Journal, arXiv:2104.01232.
5. Mark Popinchalk, Jackie Faherty, Rocio Kiman, **Ruth Angus**, Jason Curtis, Jonathan Gagne, Kelle Cruz, Emily Rice, *'Evaluating Rotation Periods of M dwarfs'*, The Astrophysical Journal, arXiv:2105.05935
6. 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

7. 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
8. 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
9. 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
10. 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
11. **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
12. 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
13. 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
14. 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
15. **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
16. **Angus, R.**; Morton, T. D., Foreman-Mackey, D., *stardate: Combining dating methods for better stellar ages*, 2019, Journal of Open Source Software, 4, 1469
17. 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

18. Ness, M. K. & others including **Angus, R.**, *Inference of stellar parameters from brightness variations*, 2019, The Astrophysical Journal, 866, 15, arXiv:1805.04519
19. **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
20. 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
21. **Angus, R.** & Kipping, D. *Probabilistic Inference of Basic Stellar Parameters: Application to Flickering Stars*, 2016, The Astrophysical Journal Letters, 823, 9, arXiv:1607.00874
22. **Angus, R.**, Foreman-Mackey, D., Johnson, A., J., *Systematics-insensitive Periodic Signal Search with K2*, 2016, The Astrophysical Journal, 818, 109, arXiv:1505.07105
23. **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
24. Vanderburg, A., & others including **Angus, R.**, *A disintegrating minor planet transiting a white dwarf*, 2015, Nature, 526, 546, arXiv:1510.06387
25. 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
26. 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
27. 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. 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
27. 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

28. LSST Science Collaboration & others, including **Angus, R.**, *Science-Driven Optimization of the LSST Observing Strategy*, 2017, arXiv:1708.04058
29. 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
30. 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
31. 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
32. Aigrain, S., & others including **Angus, R.**, *Monitoring young associations and open clusters with Kepler in two-wheel mode*, 2013, arxiv:1309.0737
33. 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
34. 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