

James Jackman

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Current Position **Arizona State University** - Postdoctoral Research Scholar. Working with Professor Evgenya Shkolnik on the optical and UV characteristics of stellar flares.
2020 - Present

Education
2016- 2020 **The University of Warwick** - PhD in Astrophysics supervised by Professor Peter Wheatley. PhD Title: “Detection of Stellar Flares and a Transiting Brown Dwarf with the Next Generation Transit Survey (NGTS)”

Research Interests

- Stellar flares, their spectra, and the effects of their irradiation on exoplanet habitability
- The connection between optical and UV signatures of stellar activity
- Transiting brown dwarfs discovered in wide-field exoplanet survey

First Author Publications

- Using Optical Line Emission to Predict the UV Luminosity of K Stars, Jackman et al, in prep.
- Big Flares From Small Stars: Detecting Flares From Faint Low-Mass Stars With NGTS Full Frame Images, Jackman et al., under review.
- Extending Optical Flare Models to the UV: Results from Comparing TESS and GALEX Flare Observations For M Dwarfs, Jackman et al., 2022, MNRAS
- Characterisation of the NUV and Optical Emission and Temperature of Flares from Ross 733 with Swift and TESS, Jackman, 2022, MNRAS
- Stellar flares in the Next Generation Transit Survey, Jackman et al., 2021, MNRAS, 504, 3246
- Stellar flares from blended and neighbouring stars in Kepler short cadence observations, Jackman et al. 2021, MNRAS, 502, 2033
- NGTS Clusters Survey II - White-light flares from the youngest stars in Orion, Jackman et al, 2020, MNRAS, 497, 809
- NGTS-7Ab: An ultra-short period brown dwarf transiting a tidally locked and active M star, Jackman et al 2019, MNRAS, 489, 5146
- Detection of a giant white-light flare on an L2.5 dwarf with the Next Generation Transit Survey, Jackman et al, 2019, MNRAS Letters, 485, L136
- Detection of a giant flare displaying quasi-periodic pulsations from a pre-main sequence M star with NGTS, Jackman et al, 2019, MNRAS, 482, 5553
- Ground-based detection of G star superflares with NGTS, Jackman et al, 2018, MNRAS, 477, 4655

Departmental Talks

- CHAMPS Team Seminar (**Invited**), Virtual, 29th August 2022
- Virtual Planet Laboratory Seminar (**Invited**), University of Washington, 2nd June 2022
- Kansas University Seminar (**Invited**), Kansas University, USA, 15th April 2022
- MIT Brown Bag Lunch (**Invited**), MIT, USA, 7th March 2022
- NSO Seminar (**Invited**), National Solar Observatory, USA, 12th October 2021
- Carnegie EPL Astronomy Seminar (**Invited**), Carnegie EPL, USA, 8th October 2021
- SESE Colloquium, Postdoc Presentations, Arizona State University, USA, 15th September 2021
- CfA Exoplanet Lunch (**Invited**), Harvard CfA, USA, 10th December 2019
- CfA Stars & Planets Seminar (**Invited**), Harvard CfA, USA, 9th December 2019
- ESO Offices (**Invited**), Santiago, Chile, 11th October 2019

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- Department Seminar, Arizona State University, Phoenix, USA 26th July 2019
- Department Seminar, University of Nevada, Las Vegas, USA 23rd July 2019
- Department Seminar, Boston University, USA 12th July 2019
- Exoplanet Lunch Talk, MIT, USA, 11th July 2019
- Group Seminar, Harvard CfA, USA, 10th July 2019
- Extrasolar Planets Seminar, NASA Goddard, USA, 27th June 2019
- Astronomy Group Seminar, University of Delaware, USA, 25th June 2019

Conference Talks

- “Bridging the Gap Between UV and Optical Flares from Low-Mass Stars” (ERES VII, Penn State University, USA, August 2022)
- “Stellar Flares - What’s Happening and What Can We Learn?” (**Invited** - Society for Astronomical Sciences Symposium, Ontario, USA, June 2022)
- “Understanding the Disconnect Between UV and White-Light Flares in Low-Mass M Stars” (Exoplanets IV meeting, Las Vegas, USA, May 2022)
- “Testing the UV predictions of white-light flare models using TESS and GALEX” (CHAMPs Exoplanet Meeting, Virtual, January 2022)
- “Studying the Disconnect Between UV and White-Light Flares with TESS and GALEX” (TESS Science Team Meeting #26, Virtual, December 2021)
- “The Disconnect Between UV and White-Light Flares in Low-mass Stars” (TESS Science Conference II, Virtual, August 2021)
- “The Disconnect Between UV and White-Light Flares in Low-mass Stars” (ERES 2021, Virtual, May 2021)
- “The Biggest Flares from the Smallest Stars with NGTS” (South East Exoplanet Meeting, London, UK, December 2019)
- “Constraining The Effects Of Stellar Flares with NGTS” (8th Astrobiology Society of Britain Conference, Newcastle, UK, April 2019)
- “Constraining The Effects Of Stellar Flares on Exoplanet Habitability with NGTS” (ERES IV, Penn State, USA, June 2018)
- “High Cadence Detections of Stellar Flares with NGTS” (EWASS, Liverpool, UK, April 2018)
- “Stellar Superflares In NGTS” (51st ESLAB Symposium “Extreme Habitable Worlds”, ESA/ ESTEC, Noordwijk, Netherlands, December 2017)

Proposals

- TESS Cycle 5 GI program “Understanding the Flaring Activity of K Stars In The White-Light and UV with TESS and GALEX” - P.I. Jackman, awarded \$70,000
- TESS Cycle 5 GI program “Simultaneous Space And Ground-Based Flare Photometry and Spectroscopy With TESS and Amateur Astronomers” - P.I. Jackman
- Swift Cycle 18 GI program “Do Optically Quiet Stars Shout in the NUV?” - P.I. Jackman, awarded \$40,000
- Swift Cycle 18 GI program “Understanding the Disconnect Between NUV and White-Light Flare Emission From Low-Mass Stars With CR Dra” - P.I. Jackman, awarded \$40,000
- TESS Cycle 4 GI program “Bridging The Gap Between White-Light And UV Flares In Low-Mass Stars” - P.I. Jackman, awarded \$70,000
- HST Cycle 29 Archival Research program “Probing The Evolution Of White-Light And FUV Flares From Low-Mass Stars With HST And TESS” - P.I. Jackman, awarded \$105,748

Services

- Referee for AJ, ApJ, Solar Physics, MNRAS and AGU Books

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- Referee for HST Cycle 30
- Volunteered time and expertise each week to a multi-national network of amateur astronomers in conducting coordinated photometric and spectroscopic observations of flare stars, including answering questions about observing methods and analysis techniques.
- 2022 Chair of the Stars, Planets and Discs Journal Club at ASU, 2017 Chair of the Exoplanet Journal at the University of Warwick

Experience

- Expert in the detection and characterisation of stellar flares using high cadence photometry from wide-field surveys, having led this work for the NGTS consortium and transferred this work to GALEX UV observations.
- Skilled in the use of spectroscopic data to study flares and measure their temperatures and emission features.
- Attending conferences and internal meetings and presenting results to both expert and general audiences.
- Chairing sessions at professional conferences, taking questions from audience members and making sure speakers stay within their allotted time.

Skills - Computing/Programming

- Experienced in the Python programming language, having developed many pipelines and analysis packages for use in my work
- Intermediate knowledge of the STILTS programming language

Other

- 23 nights observing experience
- Full US and UK driving licenses.

Other Publications

- Llamaradas Estelares: Modelling the Morphology of White-Light Flares, Tovar Mendoza et al., accepted for publication in AJ, 2022 (Jackman 4th Author)
- HAZMAT. VIII. A Spectroscopic Analysis of the Ultraviolet Evolution of K Stars: Additional Evidence for K Dwarf Rotational Stalling in the First Gigayear, Richey-Yowell et al, 2022, ApJ, 292, 2 (Jackman 4th Author)
- Periodic stellar variability from almost a million NGTS light curves, Briegal et al, 2022 MNRAS, 513, 1 (Jackman 19th Author)
- Scintillation-limited photometry with the 20-cm NGTS telescopes at Paranal Observatory, O'Brien et al, 2022, MNRAS, 509, 4 (Jackman 15th Author)
- The Aligned Orbit of WASP-148b, the Only Known Hot Jupiter with a nearby Warm Jupiter Companion, from NEID and HIRES, Wang et al. 2022, ApJ Letters, 926, 2 (Jackman 33rd Author)
- TOI-220 b: a warm sub-Neptune discovered by TESS, Hoyer et al. 2022, MNRAS, 505, 3 (Jackman 30th Author)
- NGTS-19b: a high-mass transiting brown dwarf in a 17-d eccentric orbit, Acton et al 2022, MNRAS, 505, 2 (Jackman 21st Author)
- HAZMAT. VII. The Evolution of Ultraviolet Emission with Age and Rotation for Early M Dwarf Stars, Loyd et al. 2021, ApJ, 907, 2 (Jackman 5th Author)
- Statistical Signatures of Nanoflare Activity. II. A Nanoflare Explanation for Periodic Brightenings in Flare Stars Observed by NGTS, Dillon et al, 2021, ApJ, 904, 2 (Jackman 5th Author)
- A remnant planetary core in the hot-Neptune desert, Armstrong et al, 2020, Nature, 583, 7814 (Jackman 59th Author)
- A long-period ($P = 61.8$ d) M5V dwarf eclipsing a Sun-like star from TESS and NGTS, Gill et al, 2020, MNRAS, 495, 3 (Jackman 17th Author)

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- NGTS J214358.5-380102 - NGTS discovery of the most eccentric known eclipsing M-dwarf binary system, Acton et al. 2020, MNRAS 494, 3 (Jackman 5th Author)
- NGTS-10b: the shortest period hot Jupiter yet discovered, McCormac et al. 2020, MNRAS, 493, 1 (Jackman 3rd Author)
- NGTS clusters survey - I. Rotation in the young benchmark open cluster Blanco 1, Gillen et al. 2020, MNRAS, 492, 1 (Jackman 6th Author)
- An ultrahot Neptune in the Neptune desert, Jenkins et al. 2020, Nature Astronomy, 4 (Jackman 61st Author)
- NGTS-8b and NGTS-9b: two non-inflated hot Jupiters, Costes et al. 2020, MNRAS, 491, 2 (Jackman 9th Author)
- NGTS and WASP photometric recovery of a single-transit candidate from TESS, Gill et al. 2020, MNRAS, 491, 2 (Jackman 21st Author)
- NGTS-6b: an ultrashort period hot-Jupiter orbiting an old K dwarf, Vines et al 2019, MNRAS, 489, 3 (Jackman 21st Author)
- NGTS-4b: A sub-Neptune transiting in the desert, West et al. 2019, MNRAS, 486, 4 (Jackman 8th Author)
- NGTS-5b: a highly inflated planet offering insights into the sub-Jovian desert, Eigmuller et al. 2019, A&A, 625 (Jackman 22nd Author)
- A low-mass eclipsing binary within the fully convective zone from the Next Generation Transit Survey, Casewell et al. 2018, MNRAS, 481, 2 (Jackman 9th Author)
- K2-265 b: a transiting rocky super-Earth, Lam et al. 2018, A&A, 620 (Jackman 22nd Author)
- The Next Generation Transit Survey (NGTS), Wheatley et al. 2018, MNRAS, 475, 4 (Jackman 34th Author)
- NGTS-1b: a hot Jupiter transiting an M-dwarf, Bayliss et al. 2018, MNRAS, 475, 4 (Jackman 23rd Author)
- An Earth-sized exoplanet with a Mercury-like composition, Santerne et al 2018, Nature Astronomy, 2 (Jackman 30th Author)
- Precise masses for the transiting planetary system HD 106315 with HARPS, Barros et al. 2017, A&A, 608 (Jackman 32nd Author)
- Centroid vetting of transiting planet candidates from the Next Generation Transit Survey, Gunther et al. 2017, MNRAS, 472, 1 (Jackman 17th Author)