

Oliver James Hall

PhD student in asteroseismology

programming

Python (advanced)
Unix, LaTeX, Git
(intermediate)
R, SQL (basic)

skills

Stan
PyMC3
emcee
TensorFlow
Bayesian statistics
Hierarchical models
Asteroseismology
Software development
& publication (Python)

languages

English, Dutch
(bilingual)

contact

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research interests

With the recent successes of missions such as *Kepler*, *K2*, *Gaia* and *TESS*, we have access to a vast amount of astronomical data. I am interested in leveraging these data to draw new inferences of stellar physics, through Bayesian population studies of asteroseismic data. I am currently studying the relation between mass, age and asteroseismic rotation of solar-like stars in the *Kepler* field.

presentations

2019 Jul.	TASC5/KASC12	MIT, MA, USA
	<i>"Accessible Asteroseismology with Lightkurve"</i> (invited)	
	Poster: <i>"Improving gyrochronology of field stars with asteroseismic age and rotation"</i>	
2018 Dec.	Birmingham-Warwick Science Meet-Up	University of Warwick, UK
	<i>"Testing asteroseismology with Gaia DR2: Hierarchical Models & the Red Clump"</i>	
2018 Jul.	TASC4/KASC11	Aarhus University, Denmark
	<i>"Testing asteroseismology with Gaia DR2: Luminosity of the Red Clump"</i>	
2017 Jul.	TASC3/KASC10	University of Birmingham, UK
	Poster: <i>"Mixture Models applied to Kepler backgrounds & development for TESS"</i>	
2017 Apr.	T'DA 2	Aarhus University, Denmark
	<i>"Estimating TESS backgrounds with mixture models – Update"</i>	
2016 Nov.	T'DA 1	University of Birmingham, UK
	<i>"Estimating TESS backgrounds with mixture models"</i>	

conferences & workshops

2019 Jul.	TASC5/KASC12	MIT, MA, USA
2019 Jan.	T'DA 8	Aarhus University, Denmark
2018 Oct.	T'DA 5	Ohio State University, OH, USA
2018 Jul.	T'DA 4	Aarhus University, Denmark
2018 Jul.	TASC4/KASC11	Aarhus University, Denmark
2018 Jun.	The Wetton Workshop 2018	University of Oxford, UK
2017 Dec.	T'DA 3	KU Leuven, Belgium
2017 Jul.	TASC3/KASC10	University of Birmingham, UK
2017 Apr.	T'DA 2	Aarhus University, Denmark
2016 Nov.	Asteroseismology of stellar activity cycles	Observatoire de la Côte d'Azur, France
2016 Nov.	T'DA 1	University of Birmingham, UK

research visits

2018 Oct.	Visit to the KeplerGO office [3 weeks]	NASA Ames Research Centre, CA, USA
	Invited to help build the periodogram module of lightkurve	
2018 Jan.	Visit to SAC [1 week]	Aarhus University, Denmark
	Invited to investigate & build tools for background subtraction of TESS FFIs	

education

- 2016 →2020 **PhD in Physics & Astronomy** University of Birmingham, UK
Supervisor: Dr. Guy R. Davies
"AsteroSeismology with Kepler, K2 and TESS"
- 2012 →2016 **M.Sci. Physics & Astrophysics** University of Birmingham, UK
Dissertation supervisor: Prof. William J. Chaplin
1st Class w. Honours
- 2006 →2012 **Gymnasium** Gemeentelijk Gymnasium Hilversum, Netherlands
8.5/10 average across eleven subjects

teaching and research

- 2019 **Advanced HE - Associate Fellow (AFHEA)** Advanced HE
- 2019 **Access to Birmingham (A2B) supervisor** University of Birmingham
Support applicants from disenfranchised backgrounds through the A2B scheme
- 2017 →now **2nd Year Laboratory Projects Demonstrator** University of Birmingham, UK
Taught students to build apparatus, understand their results. I marked their work and provided constructive feedback.
- 2016 →now **3rd Year Observatory Laboratory Supervisor** University of Birmingham, UK
Supervised students using an observatory. Helped students understand their results as well as the use of IRAF, Unix, and Python.
- 2015 **Summer Undergraduate Reserach Experience (SURE)** University of Leicester, UK
Performed a six-week project using Python to program a robotic arm system for testing a prototype focal plane for the Cherenkov Telescope Array.
- 2015 **Ogden Trust Teach Physics Intern** Bishop Challoner Catholic College, Birmingham, UK
Helped teach pupils throughout lessons, prepared and taught a lesson & careers workshop of my own design.

outreach & engagement

- 2019 →now **Author, Astrobites Collaboration**
Write and edit monthly summaries of astronomy papers for an undergraduate level for the website Astrobites.
- 2018 →2019 **Organiser, 9th BEAR Conference** University of Birmingham, UK
Organised local annual high performance computing conference.
- 2018 →now **Demonstrator, Applicant Visit Day** University of Birmingham, UK
Developed and taught laboratory sessions for undergraduate applicants.
- 2016 →2017 **Partnered Researcher, Royal Society Partnership Grant**
Developed and taught a series of lessons and lab activities engaging Year 9 pupils with exoplanet characterisation and asteroSeismology.

community services

2018 →now	Member of the lightkurve collaboration	NASA Ames Research Centre, CA, USA
2016 →now	Member of the <i>TESS Data for Asteroseismology</i> (T'DA) collaboration	
2016 →now	Member of the <i>TESS Asteroseismic Science Consortium</i> (TASC)	
2017	LOC member for TASC3/KASC11	University of Birmingham, UK

grants & awards

2019	Alumni Fund One-Off Grants - £815	The Ogden Trust, UK
2018	IOP Research Student Conference Fund - £300 (<i>declined</i>)	Institute of Physics, UK
2016	Royal Society Partnership Grant - £3000	The Royal Society, UK
2015	Teach Physics Outstanding Intern 2015 - shortlisted	The Ogden Trust, UK

publications

- Hall, O. J.**, Davies, G. R., Elsworth, Y. P. et al. [3 citations]
Testing asteroseismology with Gaia DR2: Hierarchical models of the Red Clump
Monthly Notices of the Royal Astronomical Society, 2019
doi:10.1093/mnras/stz1092, **arXiv:1904.07919**
- Bugnet, L., García, R. A., Mathur, S., Davies, G. R., **Hall, O. J.**, Lund, M. N., Rendle, B. M.
FliPer_{Class}: In search of solar-like pulsators among TESS targets
arXiv e-prints, 2019
doi:10.1051/0004-6361/201834780, **arXiv:1902.09854**
- Huber, D., Chaplin, W. J., Chontos, A ... **Hall, O. J.** ... et al. [8 citations]
A Hot Saturn Orbiting An Oscillating Late Subgiant Discovered by TESS
arXiv e-prints, 2019
doi:10.3847/1538-3881/ab1488, **arXiv:1901.01643**
- Lightkurve Collaboration, Cardoso, J. V. d. M., Hedges, C. ... **Hall, O. J.** ... et al. [3 citations]
Lightkurve: Kepler and TESS time series analysis in Python
Astrophysics Source Code Library, 2018
ascl:1812.013
- Bugnet, L., García, R. A., Davies, G. R. ... **Hall, O. J.** ... et al. [8 citations]
FliPer: A global measure of power density to estimate surface gravities of main-sequence solar-like stars and red giants
Astronomy & Astrophysics, 2018
doi:0.1051/0004-6361/201833106, **arXiv:1809.05105**
- Khan, S., **Hall, O. J.**, Miglio, A. et al. [7 citations]
The Red-giant Branch Bump Revisited: Constraints on Envelope Overshooting in a Wide Range of Masses and Metallicities
The Astrophysical Journal, 2018
doi:10.3847/1538-4357/aabf90, **arXiv:1804.06669**
- Davies, G. R., Lund, M. N. and Miglio, A. ... **Hall, O. J.** ... et al. [23 citations]
Using red clump stars to correct the Gaia DR1 parallaxes
Astronomy & Astrophysics, 2017
doi:10.1051/0004-6361/201630066, **arXiv:1701.02506**