Oliver James Hall
PhD student in asteroseismology

programming

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

skills

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

languages

English, Dutch (bilingual)

contact

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Astronomy
University of Birmingham
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research interests

With the recent successes the *Kepler*, K2, *Gaia* and TESS missions, 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 rotation of solar-like stars in the *Kepler* field.

presentations

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

conferences & workshops

2019 Aug.	Astro Hack Week 2019	Kavli Institude for Cosmology, UK
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	

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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 |

Disseration 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.

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community services

grants & awards

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

publications

Hall, O. J., Davies, G. R., Elsworth, Y. P. et al. [6 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`

Khullar, G., Kholer, S., Konchady, T. ... **Hall, O. J.** ... et al.
Astrobites as a Community-led Model for Education, Science Communication, and Accessibility in Astrophysics
arXiv e-prints, 2019
`arXiv:1907.09496`

Huber, D., Chaplin, W. J., Chontos, A ... **Hall, O. J.** ... et al. [9 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`

Bugnet, L., García, R. A., Mathur, S., Davies, G. R., **Hall, O. J.**, Lund, M. N., Rendle, B. M. [1 citation]
FliPer$_{Class}$: In search of solar-like pulsators among TESS targets
arXiv e-prints, 2019
`doi:10.1051/0004-6361/201834780, arXiv:1902.09854`

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. [9 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*