

# ALAN JACKSON

## CONTACT

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[www.alanjacksonastronomy.com](http://www.alanjacksonastronomy.com)

## PUBLICATIONS

33 refereed publications

2 other publications

1730 total citations      H-index 19  
(Google Scholar)

### Profiles

Google Scholar: [Alan P. Jackson](#)

NASA ADS: [Alan P. Jackson](#)

ArXiv: [Alan P. Jackson](#)

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## EXPERIENCE

2023 –	<b>Assistant Professor</b> Department of Physics, Astronomy and Geosciences, Towson University
2019 – 2023	<b>Assistant Research Scientist</b> School of Earth and Space Exploration, Arizona State University
2016 – 2019	<b>CPS Postdoctoral Fellow</b> Centre for Planetary Sciences, University of Toronto
2014 – 2016	<b>Postdoctoral Research Associate</b> School of Earth and Space Exploration, Arizona State University

## EDUCATION

2010 – 2014	<b>PhD, Institute of Astronomy, University of Cambridge</b> Supervisor: Mark Wyatt Thesis title: Debris in planetary systems
2006 – 2010	<b>MPhys (Hons), 1st class, Merton College, University of Oxford</b> College scholarships: Exhibitioner (2007), Postmaster (2008-2010)

## TEACHING

2023	Instructor for The Sky and the Solar System (ASTR 161) introductory undergraduate course
2015	Instructor for Terrestrial Planet Formation (GLG 598) graduate course
2011 – 2013	Supervisor/tutor (groups of 2-3) for Astrophysical Fluid Dynamics Part II (3 <sup>rd</sup> year undergraduate) course

## MENTORING

2018	Loic Nassif-Lachapelle (undergraduate) – University of Toronto, CPS summer undergraduate fellowship, advisor
2015 – 2017	Viranga Perera (graduate) – Arizona State University, co-advisor now Teaching Professor at UT Austin
2015 – 2019	Travis Gabriel (graduate) – Arizona State University, co-advisor now staff at US Geological Survey

## GRANTS/FELLOWSHIPS

Project/Fellowship	Position	Funding organisation	Award date	Duration	Total funding
<i>TREC: Tracing Rocky Exoplanet Compositions</i>	Co-I (PI S. Desch)	NASA (ICAR)	2023	5 years	\$5.8 million
<i>How do Super-Mercuries form?</i>	Co-I (PI C. Unterborn)	NASA (XRP)	2023	3 years	\$604,000
<i>Debris Disk Variability - Exploring the Diverse Outcomes of Large Collisions during the Eras of Oligarchic and Chaotic Growth II</i>	Collaborator (PI K. Su)	NASA (ADAP)	2020	3 years	\$412,000
<i>Exploration Fellowship</i>	PI	Arizona State University	2019	3 years	\$250,000
<i>Application of Machine Learning to Giant Impact Studies of Planet Formation</i>	Collaborator (PI E. Asphaug)	NASA (EW)	2019	3 years	\$548,000
<i>Debris Disk Variability - Exploring the Diverse Outcomes of Large Collisions during the Eras of Oligarchic and Chaotic Growth</i>	Collaborator (PI K. Su)	NASA (ADAP)	2017	2 years	\$198,000
<i>Stop hitting yourself: did most terrestrial impactors originate from the terrestrial planets?</i>	PI/Science PI	NASA (SSW)	2016	4 years	\$643,000

## OBSERVING PROGRAMS

Project	Position	Facility	Award date	Time/time valuation	Support funding
<i>When terrestrial planets collide: imaging the aftermath of an impact in the Solar neighbourhood</i>	Co-I (PI L. Matra)	ALMA	2022	16.2 hrs	-
<i>Probing terrestrial planet formation with extreme disk variability</i>	Co-I (PI K. Su)	Spitzer Space Telescope	2016	120 hrs/ \$258,000	-
<i>Mineralogical evolution in extreme debris disks II</i>	Co-I (PI K. Su)	SOFIA	2016	2.5 hrs	\$32,000
<i>Mineralogical evolution in extreme debris disks</i>	Co-I (PI K. Su)	SOFIA	2015	3.5 hrs	\$38,000
<i>Debris disk variability: observational test bed for probing terrestrial planet formation</i>	Co-I (PI K. Su)	Spitzer Space Telescope	2014	130 hrs/ \$279,500	\$10,000

## PROFESSIONAL SERVICE

2022	Session chair at 52 <sup>nd</sup> Lunar and Planetary Science Conference
2021 – 2023	School of Earth and Space Exploration Inclusive Community Committee
2021 –	Member Vera Rubin Observatory Legacy Survey of Space and Time (LSST) Solar System Science Collaboration (SSSC)
2020 – 2021	Member NASA Nexus for Exoplanet System Science (NExSS) Science Communications Working Group (SCWG)
2018	Dwornik Student Presentation Award judge, 49 <sup>th</sup> Lunar and Planetary Science Conference
2017	Session chair at 48 <sup>th</sup> Lunar and Planetary Science Conference
2017 – 2018	Co-convenor for CPS lunchtime seminars at University of Toronto, Scarborough
2015 – 2016	Convener for Stars, Planets and Disks discussion group at Arizona State University
2015 – 2020	Member, ASU Nexus for Exoplanet System Science (NExSS) team
2015	Chambliss Student Poster Award judge, 225 <sup>th</sup> AAS meeting

## JOURNAL REVIEWER

<i>The Astrophysical Journal</i> (3), <i>Computational Astrophysics &amp; Cosmology</i> (1), <i>Monthly Notices of the Royal Astronomical Society</i> (5), <i>Nature</i> (2),	<i>Nature Astronomy</i> (2), <i>Science</i> (1) <i>Icarus</i> (4) <i>Journal of Astronomical Instrumentation</i> (1)
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## GRANT REVIEWER

NASA grant proposals (2 on panel, 5 external),  
UK Science & Technology Facilities Council (4),

Austrian Science Fund (1)  
European Research Council (1)

## MEDIA

### APPEARANCES

Program	Medium	Date
NHK (Japanese national broadcaster) documentary on 'Oumuamua	Television	2021
Planetary Radio (Planetary Society and syndicated to NPR)	Podcast/Radio	2021
The Cosmic Companion	Podcast	2021
CJAD 800 Montreal	Radio	2021
BBC World Service Newsday programme	Radio	2021
NHK documentary on 'Oumuamua	Television	2018
Royal Canadian Institute for Science podcast	Podcast	2017
'Naked Scientists' BBC Radio Cambridgeshire	Radio	2013

### PRESS RELEASES

Accompanying the paper

*Carbon monoxide gas produced by a giant impact in the inner region of a young system:*

[Massachusetts Institute of Technology](#)

Covered by a variety of news organisations including the *Daily Mail* (UK), *Space.com*, *Newsweek* (US)

Accompanying the papers

*1I/'Oumuamua as an N<sub>2</sub> ice fragment of an exo-Pluto surface I: Size and Compositional Constraints,*

*1I/'Oumuamua as an N<sub>2</sub> ice fragment of an exo-Pluto surface II: Generation of N<sub>2</sub> ice fragments and the origin of 'Oumuamua:*

[Arizona State University](#)

[American Geophysical Union](#)

Widely covered by news organisations in the US and internationally, including in print at the *Associated Press* (int.), the *Guardian* (int.), *CNN* (USA), and the *BBC* (UK); on radio at *CBS News Radio LA* (USA), and the *BBC World Service* (int.); and on television at *Al-Jazeera English* (int.)

Accompanying the paper

*Ejection of rocky and icy material from binary star systems: Implications for the origin and composition of 1I/'Oumuamua:*

[University of Toronto](#)

[Royal Astronomical Society](#)

Carried by a variety of news organisations in Canada and internationally, including *The Guardian* (int.), the *Associated Press* (int.), the *Daily Mail* (UK), *CTV News* (Canada) and the *CBC* (Canada)

## INVITED CONFERENCE PRESENTATIONS

	Date	Title	Event	Location
1)	2021	To see a world in a shard of ice: 'Oumuamua as a fragment of N <sub>2</sub> ice from an exo-Pluto	American Geophysical Union Fall Meeting 2021	New Orleans, USA
2)	2018	Giant impacts and debris, what we can learn about planet formation	Current and future trends in debris disk science	Victoria, Canada
3)	2018	Giant Impacts and their relation to Rapidly Evolving Debris Disks	Astrophysical Frontiers in the next decade and beyond	Portland, Oregon, USA

## PUBLICATION LIST

\*Student-led publication under my supervision

### REFEREED

1. *Impact generation of holes in the early lunar crust: Scaling relations*  
Jackson A. P., Perera V., Gabriel T.S.J., 2023, *Journal of Geophysical Research: Planets*, e2022JE007498
2. *Mercury's formation within the early instability scenario*  
Clement M.S., Chambers J.E., Kaib N.A., Raymond S.N., **Jackson A.P.**, 2023, *Icarus*, 394, 115445
3. *Some pertinent issues for interstellar panspermia raised after the discovery of 1I/'Oumuamua*  
Desch S.J., **Jackson A.P.**, 2022, *Astrobiology*, 22(12), 1400-1413
4. *The breakup of a long-period comet is not a likely match to the Chicxulub impactor*  
Desch S.J., **Jackson A.P.**, Noviello J.L., Anbar A., 2022, *Scientific Reports*, 12, 10415
5. *RW Aur A: SpeX spectral evidence for differentiated planetesimal formation, migration and destruction in a ~3 Myr old excited CTTS system*  
Lisse C.M., Sitko M.L., Wolk S.J., Günther H.M., Brittain S., Green J.D., Steckloff J., Johnson B., Espaillat C.C., Koutoukali M., Moorman S.Y., **Jackson A.P.**, 2022, *Astrophysical Journal*, 928, 189
6. *A star-sized impact-produced dust clump in the terrestrial zone of HD 166191*  
Su K.Y.L., Kennedy G., Schlawin E., **Jackson A.P.**, Rieke G., 2022, *Astrophysical Journal*, 927, 135
7. *CO gas produced by a giant impact in the inner region of a young system*  
Schneiderman T., Matrà L., **Jackson A.P.**, Kennedy G., Kral Q., Marino S., Oberg K., Su K., Wilner D., Wyatt M., 2021, *Nature*, 598, 425
8. *Dynamical avenues for Mercury's origin I: The lone survivor of a primordial generation of short-period proto-planets*  
Clement M.S., Chambers J.E., **Jackson A.P.**, 2021, *Astrophysical Journal*, 161, 240
9. *1I/'Oumuamua as an N<sub>2</sub> ice fragment of an exo-pluto surface I: Size and Compositional Constraints*  
**Jackson A.P.**, Desch S.J., 2021, *Journal of Geophysical Research*, 126, e2020JE006706
10. *1I/'Oumuamua as an N<sub>2</sub> ice fragment of an exo-pluto surface II: Generation of N<sub>2</sub> ice fragments and the origin of 'Oumuamua*  
Desch S.J., **Jackson A.P.**, 2021, *Journal of Geophysical Research*, 126, e2020JE006807
11. *Mid-infrared Studies of HD 113766 and HD 172555: Assessing Variability in the Terrestrial Zone of Young Exoplanetary Systems*  
Su K.Y.L., Rieke G.H., Melis C., **Jackson A.P.**, Smith P.S., Meng H.Y.A., Gáspár A., 2020, *Astrophysical Journal*, 898, 21
12. *HD 145263: Spectral observations of silica debris disk formation via extreme space weathering?*  
Lisse C.M., Meng H.Y.A., Sitko M.L., Morlok A., Johnson B.C., **Jackson A.P.**, Vervack R.J. Jr., Chen C.H., Wolk S.J., Lucas M.D., Marengo M., Britt D.T., 2020, *Astrophysical Journal*, 894, 116
13. *Automated crater shape retrieval using weakly-supervised deep learning*  
Ali-Dib M., Menou K., **Jackson A.P.**, Zhu C., Hammond N., 2020, *Icarus*, 345, 113749
14. *\*Gravity dominated collisions: a model for largest remnant masses with treatment for 'hit and run' and density stratification*  
Gabriel T.S.J., **Jackson A.P.**, Asphaug E., Reufer A., Jutzi M., Benz W., 2020, *Astrophysical Journal*, 891, 40
15. *Can a machine learn the outcome of planetary collisions?*  
Valencia D., Paracha E., **Jackson A.P.**, 2019, *Astrophysical Journal*, 882, 35
16. *Oort cloud asteroids: collisional evolution, the Nice Model and the Grand Tack*  
Shannon A., **Jackson A.P.**, Wyatt M.C., 2019, *Monthly Notices of the Royal Astronomical Society*, 485, 5511
17. *Extreme debris disk variability: exploring the diverse outcomes of large asteroid impacts during the era of terrestrial planet formation*  
Su K.Y.L., **Jackson A.P.**, Gáspár A., Rieke G.H., Dong R., Olofsson J., Kennedy G.M., Leinhardt Z.M., Malhotra R., Hammer M., Meng H.Y.A., Rujopakarn W., Rodriguez J.E., Pepper J., Reichart D.E., James D., Stassun K.G., 2019, *Astronomical Journal*, 157, 202

18. *Lunar crater identification via machine learning*  
Silburt A., Ali-Dib M., Chenchong Z., **Jackson A.P.**, Valencia D., Kissin Y., Tamayo D., Menou K., 2019, *Icarus*, 317, 27
19. *\*Effect of re-impacting debris on the solidification of the lunar magma ocean*  
Perera V., **Jackson A.P.**, Elkins-Tanton L.T., Asphaug E., 2018, *Journal of Geophysical Research: planets*, 123, 1168
20. *Ejection of rocky and icy material from binary star systems: Implications for the origin and composition of 1I/Oumuamua*  
**Jackson A.P.**, Tamayo D., Hammond N., Ali-Dib M., Rein H., 2018, *Monthly Notices of the Royal Astronomical Society Letters*, 478, 49
21. *Dynamical and biological panspermia constraints within multi-planet exosystems*  
Veras D., Armstrong D.J., Blake J.A., Gutiérrez-Marcos J.F., **Jackson A.P.**, Schäeffer H., 2018, *Astrobiology*, 9, 18
22. *Constraints on the pre-impact orbits of Solar System giant impactors*  
**Jackson A.P.**, Gabriel T.S.J., Asphaug E., 2018, *Monthly Notices of the Royal Astronomical Society*, 474, 2924
23. *The Taurus boundary of stellar/sub-stellar (TBOSS) survey II: Disk masses from ALMA continuum observations*  
Ward-Duong K., Patience J., Bulger J., van der Plas G., Menard F., Pinte C., **Jackson A.P.**, Bryden G., Turner N.J., Harvey P., Hales A., de Rosa R.J., 2018, *Astrophysical Journal*, 155, 54
24. *How to design a planetary system for different scattering outcomes: giant impact sweet spot, maximising exocomets, scattered disks*  
Wyatt M.C., Bonsor A., **Jackson A.P.**, Marino S., Shannon A., *Monthly Notices of the Royal Astronomical Society*, 2017, 464, 3385
25. *Gas and dust around A-type stars at tens of Myr: signatures of cometary breakup*  
Greaves J. S., Holland W. S., Matthews B. C., Marshall J. P., Dent W. R. F., Woitke P., Wyatt M. C., Matrà L., **Jackson A.P.**, *Monthly Notices of the Royal Astronomical Society*, 2016, 461, 3910
26. *\*The spherical Brazil nut effect and its significance to asteroids*  
Perera V., **Jackson A.P.**, Asphaug E., 2016, *Icarus*, 278, 194
27. *Insights into planet formation from debris disks: II. Giant impacts in extrasolar planetary systems*  
Wyatt M.C., **Jackson A.P.**, in *The disk in relation to the formation of planets and their proto-atmospheres*, eds. Falanga M., Rodrigo R., Blanc M., Lammer H., International Space Science Institute – Beijing, 2016, also at *Space Science Reviews*, 2016, 205, 231
28. *Eight billion asteroids in the Oort cloud*  
Shannon A., **Jackson A.P.**, Veras D., Wyatt M.C., 2014, *Monthly Notices of the Royal Astronomical Society*, 446, 2059
29. *Debris from giant impacts between planetary embryos at large orbital radii*  
**Jackson A.P.**, Wyatt M.C., Bonsor A., Veras D., 2014, *Monthly Notices of the Royal Astronomical Society*, 440, 3757
30. *Molecular Gas Clumps from the Destruction of Icy Bodies in the  $\beta$  Pictoris Debris Disk*  
Dent W.R.F., Wyatt M.C., Roberge A., Augereau J.-C., Casassus S., Corder S., Greaves J.S., de Gregorio-Monsalvo I., Hales A., **Jackson A.P.**, Hughes A.Meredith, Lagrange A.-M., Matthews B., Wilner D., 2014, *Science*, 343, 1490
31. *Debris from terrestrial planet formation: the Moon-forming collision*  
**Jackson A.P.**, Wyatt M.C., 2012, *Monthly Notices of the Royal Astronomical Society*, 425, 657
32. *Planetary evaporation by UV & X-ray radiation: basic hydrodynamics*  
Owen J.E., **Jackson A.P.**, 2012, *Monthly Notices of the Royal Astronomical Society*, 425, 2931
33. *The coronal X-ray-age relation and its implications for the evaporation of exoplanets*  
**Jackson A.P.**, Davis T.A., Wheatley P.J., 2012, *Monthly Notices of the Royal Astronomical Society*, 422, 2024

## OTHER PUBLICATIONS

1. *The Chicxulub impactor: comet or asteroid?*  
Desch S.J., Noviello J.L., **Jackson A.P.**, Anbar A., 2021, *Astronomy & Geophysics*, 62, 3.34-3.37
2. *M-stars are fast and neat and A-stars are slow and messy at late-stage rocky planet formation*  
Lisse C.M., **Jackson A.P.**, Wolk S.J., Snios B.T., Desch S.J., Unterborn C., Patel R.I., Owen J.E., Panic O., 2019, *Research Notes of the American Astronomical Society*, 3, 90

## PUBLIC OUTREACH

### ACTIVITIES

2017	Speaker and guide for Canada 150 UTSC Solar Walk
2010-2014	Assistant at Institute of Astronomy public observing evenings
2011, 2012	Demonstrator at annual Cambridge University Science Festival
2011-2014	Member of the Institute of Astronomy Ask-an-Astronomer team

### PUBLIC TALKS

Date	Title	Venue/Organisation	Audience
Oct 2021	Formation of the Planets and Solar system	Lecture for Arizona Museum of Natural History course, joint with Jessica Noviello	Online
Aug 2021	To see a world in a shard of ice	National Space Society, Phoenix	Online
Sep 2020	Formation of the Planets and Solar system	Lecture for Arizona Museum of Natural History course, joint with Jessica Noviello	Online
May 2018	'Oumuamua, our first interstellar visitor	North York Astronomical Association	Audience 40
Mar 2018	Making the Moon	Royal Astronomical Society of Canada, Mississauga Centre	Audience 150
Oct 2017	Solar System Origins	Royal Canadian Institute for Science event: The Planets, a Musical Odyssey of Evolution, Environment and Exploration	Audience 200
Jul 2017	150 years of Solar System astronomy	UTSC, Toronto Canada Day Solar Walk	Audiences 150-180
Nov 2013	Views of Venus	Institute of Astronomy, Cambridge Public observing evening	Audience 170