ALAN JACKSON

CONTACT

Address
School of Earth and Space Exploration, Bateman Physical Sciences F-wing, 550 E Tyler Mall, Tempe, Arizona, 85287-1404, USA

Telephone
(+1) 480 965 9718

E-mail
alan.jackson@asu.edu

Website
www.alanjacksonastronomy.com

PUBLICATIONS

29 refereed publications
3 submitted
2 other publications

1330 total citations H-index 16 (Google Scholar)

Profiles

Google Scholar: Alan P. Jackson
NASA ADS: Alan P. Jackson
ArXiv: Alan P. Jackson
ORCID: 0000-0003-4393-9520

EXPERIENCE

Nov 2019 –	**Assistant Research Scientist** School of Earth and Space Exploration, Arizona State University
Oct 2016 – Jul 2019	**CPS Postdoctoral Fellow** Centre for Planetary Sciences, University of Toronto
Feb 2014 – Sep 2016	**Postdoctoral Research Associate** School of Earth and Space Exploration, Arizona State University

EDUCATION

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

TEACHING

Spring 2015	Instructor for Terrestrial Planet Formation (GLG 598) graduate course
Jan 2011 – May 2013	Supervisor/tutor (groups of 2-3) for Astrophysical Fluid Dynamics Part II (3rd year undergraduate) course

MENTORING

Summer 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 – 2018	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
Exploration Fellowship	PI	Arizona State University	Nov 2019	3 years	$250,000
Debris Disk Variability - Exploring the Diverse Outcomes of Large Collisions during the Eras of Oligarchic and Chaotic Growth II	Collaborator (PI Kate Su)	NASA (ADAP)	Jan 2020	3 years	$412,000
Application of Machine Learning to Giant Impact Studies of Planet Formation	Collaborator (PI Erik Asphaug)	NASA (EW)	Feb 2019	3 years	$548,000
Debris Disk Variability - Exploring the Diverse Outcomes of Large Collisions during the Eras of Oligarchic and Chaotic Growth	Collaborator (PI Kate Su)	NASA (ADAP)	Jan 2017	2 years	$198,000
Stop hitting yourself: did most terrestrial impactors originate from the terrestrial planets?	PI/Science PI	NASA (SSW)	Apr 2016	4 years	$643,000

OBSERVING PROGRAMS

Project	Position	Facility	Award date	Time/time valuation	Support funding
Probing terrestrial planet formation with extreme disk variability	Co-I (PI Kate Su)	Spitzer Space Telescope	Aug 2016	120 hrs/ $258,000	-
Mineralogical evolution in extreme debris disks II	Co-I (PI Kate Su)	SOFIA	Oct 2016	2.5 hrs	$32,000
Mineralogical evolution in extreme debris disks	Co-I (PI Kate Su)	SOFIA	Oct 2015	3.5 hrs	$38,000
Debris disk variability: observational test bed for probing terrestrial planet formation	Co-I (PI Kate Su)	Spitzer Space Telescope	Dec 2014	130 hrs/ $279,500	$10,000

PROFESSIONAL SERVICE

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

JOURNAL REVIEWER

The Astrophysical Journal (3),
Computational Astrophysics & Cosmology (1),
Monthly Notices of the Royal Astronomical Society (4),
Nature (2),
Nature Astronomy (2),
Science (1)

GRANT REVIEWER

NASA grant proposals (2 on panel, 5 external),
UK Science & Technology Facilities Council (3),
Austrian Science Fund (1)
European Research Council (1)

MEDIA

APPEARANCES

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

PRESS RELEASES

Accompanying the paper
A star-sized impact-produced dust clump in the terrestrial zone of HD 166191:
NASA/JPL University of Arizona
Covered by a variety of new organisations including *CNN* (USA), *CTV News* (Canada), *Frankfurter Neue Presse* (Germany)

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 N2 ice fragment of an exo-Pluto surface I: Size and Compositional Constraints,
1I/'Oumuamua as an N2 ice fragment of an exo-Pluto surface II: Generation of N2 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)

PUBLICATION LIST

*Student-led publication under my supervision

IN REVIEW

1. *1I/'Oumuamua and the viability of the interstellar panspermia hypothesis*
   Desch S.J., **Jackson A.P.**, 2021, Astrobiology, submitted
2. *Impact generation of holes in the early lunar crust*
   Jackson A.P., Perera V., Gabriel T.S.J., 2021, Journal of Geophysical Research: Planets, in review
3. *Matters Arising on "Breakup of a long-period comet as the origin of the dinosaur extinction" by Siraj & Loeb*
   Desch S.J., **Jackson A.P.**, Noviello J.L., Anbar A., 2021, Scientific Reports, in review

REFEREED

1. *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, Astronomical Journal, in press
2. *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
3. *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
4. *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
5. *1I/'Oumuamua as an N_2 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
6. *1I/'Oumuamua as an N_2 ice fragment of an exo-pluto surface II: Generation of N_2 ice fragments and the origin of 'Oumuamua*
   Desch S.J., **Jackson A.P.**, 2021, Journal of Geophysical Research, 126, e2020JE006807
7. *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
8. *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
9. *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
10. **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
11. *Can a machine learn the outcome of planetary collisions?*
    Valencia D., Paracha E., **Jackson A.P.**, 2019, Astrophysical Journal, 882, 35
12. *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
13. *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

14. *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

15. **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

16. *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

17. *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

18. *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

19. *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

20. *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

21. *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

22. **The spherical Brazil nut effect and its significance to asteroids*
    Perera V., **Jackson A.P.**, Asphaug E., 2016, Icarus, 278, 194

23. *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

24. *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

25. *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

26. *Molecular Gas Clumps from the Destruction of Icy Bodies in the β 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

27. *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

28. *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

29. *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

PRESENTATIONS

INVITED CONFERENCE PRESENTATIONS

	Date	Title	Event	Location
1)	Dec 2021	To see a world in a shard of ice: 'Oumuamua as a fragment of N_2 ice from an exo-Pluto	American Geophysical Union Fall Meeting 2021	New Orleans, USA
2)	Sep 2018	Giant impacts and debris, what we can learn about planet formation	Current and future trends in debris disk science	Victoria, Canada
3)	Jun 2018	Giant Impacts and their relation to Rapidly Evolving Debris Disks	Astrophysical Frontiers in the next decade and beyond	Portland, Oregon, USA

SEMINARS AND COLLOQUIA

	Date	Title	Event	Location
1)	Jun 2021	To see a world in a shard of ice: the composition of 'Oumuamua and planet formation in the outer reaches	EPL seminar	Earth and Planets Laboratory, Carnegie Institution for Science, USA
2)	Feb 2020	Stop hitting yourself! Puncturing the early lunar crust with re-impacting debris	SESE colloquium	SESE, Arizona State University, USA
3)	Sep 2019	No man (or moon) is an island: Impacts and the lunar magma ocean	CPS planetary seminar	University of Toronto at Scarborough, Canada
4)	Jul 2018	The Solar system is rare: reconciling the formation pathways of the Solar system and the Kepler systems	Astronomy seminar	University of Warwick, UK
5)	Mar 2018	The Solar system is unusual: Two channels for terrestrial planet formation	Astronomy colloquium	Pennsylvania State University, Pennsylvania, USA
6)	Feb 2018	The Solar system is unusual: Two channels for terrestrial planet formation	Astronomy colloquium	University of Rochester, New York, USA
7)	Jun 2017	To see a world in a grain of sand: Using debris to test planet formation theory and the occurrence rate of Solar System analogues	Astrophysics seminar	Notre Dame University, South Bend, Indiana, USA
8)	Sep 2015	Asymmetric and variable debris disks: signatures of ongoing planet formation	Astrophysics colloquium	Lund University, Sweden
9)	Sep 2015	Optically thick debris from terrestrial planet formation	Astrophysics seminar	Institute of Astronomy, Cambridge, UK
10)	Oct 2013	Light from shattered worlds	Astrophysics seminar	DAMTP, Cambridge, UK
11)	Mar 2013	Light from shattered worlds	Planet-Z meeting	ETH Zurich, Switzerland
12)	May 2012	When worlds collide: Debris from terrestrial planet formation	Astrophysics seminar	Institute of Astronomy, Cambridge, UK

CONTRIBUTED CONFERENCE ORAL PRESENTATIONS

	Date	Title	Event	Location
1)	Mar 2021	To see a world in a shard of ice: 'Oumuamua as a fragment of N_2 ice from an exo-Pluto	LPSC 2021	Virtual
2)	Mar 2019	Puncturing holes in the early lunar crust with re-impacting debris	LPSC 2019	The Woodlands, Texas, USA
3)	Oct 2018	Observing giant, planet forming impacts in exoplanetary systems	The first billion years: bombardment	Flagstaff, Arizona, USA
4)	Mar 2018	Ejection of rocky and icy material from binary star systems: Implications for the origin and composition of 1I/`Oumuamua	LPSC 2018	The Woodlands, Texas, USA

5)	Oct 2017	Constraining the pre-impact orbits of Solar System giant impactors	DPS 2017	Provo, Utah, USA
6)	Aug 2017	Constraining the pre-impact orbits of Solar System giant impactors	Accretion: building new worlds	LPL, Houston, Texas, USA
7)	Mar 2017	Impacts into thin crust overlying a magma ocean	LPSC 2017	The Woodlands, Texas, USA
8)	Oct 2015	Extreme, Variable debris disks produced by giant impacts during terrestrial planet formation	EPSC 2015	Nantes, France
9)	Feb 2015	Stop hitting yourself: did most terrestrial impactors originate from the terrestrial planets?	Early solar system bombardment III	LPL, Houston, Texas, USA
10)	Jan 2015	Debris from giant impacts: signatures of forming and dynamic planetary systems	AAS 225	Seattle, Washington, USA
11)	Sep 2014	Giant impacts in the Beta Pic system	30 years of Beta Pic and debris disk studies	IAP, Paris, France
12)	Jul 2014	Debris from giant impacts, at home and abroad	Characterising planets across the HR diagram	Institute of Astronomy, Cambridge, UK
13)	Sep 2013	Light from shattered worlds	EPSC 2013	UCL, London, UK
14)	Oct 2012	When worlds collide: Debris from terrestrial planet formation	Rocks 'n' stars	MPS, Göttingen, Germany
15)	Mar 2012	Evaporating planets with stellar X-rays: A potential test for migration scenarios?	UK-Germany NAM	Manchester, UK
16)	Mar 2012	Debris from giant impacts	Exoplanets and their host stars	Oxford, UK

CONTRIBUTED CONFERENCE POSTER PRESENTATIONS

	Date	Title	Event	Location
1)	Mar 2022	Ice Impact Experiments with EPIC: Validation of Results and Explosive Penetration of a Pressurised Water Pocket	LPSC 2022	The Woodlands, Texas, USA
2)	Mar 2022	Chips Off the Old Block: 1I/'Oumuamua and C/2016 R2 as Fragments of the Surfaces of Pluto-Like Planets	LPSC 2022	The Woodlands, Texas, USA
3)	Mar 2021	A moth-eaten blanket: Re-impacting debris punctured holes in the early lunar crust	LPSC 2021	Virtual
4)	Jul 2018	Giant Impacts and their relation to Rapidly Evolving Debris Disks	Exoplanets 2	Cambridge, UK
5)	Aug 2017	Impact generation of holes in the early lunar crust	Accretion: building new worlds	LPL, Houston, Texas, USA
6)	Mar 2017	Constraining the pre-impact orbits of Solar System giant impactors	LPSC 2017	The Woodlands, Texas, USA
7)	Oct 2016	Constraining the pre-impact orbits of Solar System giant impactors	DPS 48/EPSC 2016	Pasadena, CA, USA
8)	Oct 2016	Stop hitting yourself!	DPS 48/EPSC2016	Pasadena, CA, USA
9)	Nov 2014	Stop hitting yourself: did most terrestrial impactors originate from the terrestrial planets?	DPS 46	Tucson, Arizona, USA
10)	Jun 2013	Light from shattered worlds: debris from giant impacts	IAUS 299	Victoria, British Columbia, Canada
11)	Mar 2013	Debris from giant impacts: A dusty window on terrestrial planet formation	Characterising Exoplanets	Royal Society, London, UK
12)	Mar 2012	Debris from giant impacts: Signposts of terrestrial planet formation	UK-Germany NAM	Manchester, UK
13)	Jul 2011	Debris from giant impacts: Signposts of terrestrial planet formation	Origins of solar systems	Mt. Holyoke College, Massachusetts, USA

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