Curriculum Vitae – James E. Owen

Personal Information

James Edward Owen
Astrophysics Group, Blackett Laboratory, Imperial College London
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Education

University of Cambridge - Ph.D. Astronomy - August 2011

University of Cambridge - M.Sci. Physics - June 2008

University of Cambridge - B.A. Natural Sciences - June 2007, MA since 04/2011

Professional Experience

Royal Society University Research Fellow : July 2017 →
Imperial College London

NASA Hubble Fellow : November 2014 → June 2017
Member, Institute of Advanced Study, Princeton.

CITA Post-doctoral Fellow : September 2011 → October 2014
Canadian Institute for Theoretical Astrophysics.

Graduate Student : October 2008→August 2011
Institute of Astronomy, University of Cambridge

UROP Summer Student : Summer 2007
Mullard Radio Astronomy Observatory, University of Cambridge

Awards & Prizes

Royal Society University Research Fellowship (awarded 2016, commenced 2017)
NASA Hubble fellowship (awarded 2014)
CITA fellowship (awarded 2011)
Physics MSci Thesis Prize, University of Cambridge (Theory/Computational) 2008
UROP Summer Research Grant 2007, Supervisor: Dr. John Richer
Churchill College Scholar, 2006 → 2009

Skills

Computational :

Numerical Hydrodynamics using the ZEUS, PLUTO & ATHENA codes.
Numerical Planetary evolution using the MESA code.
Radiative Transfer using the MOCASSIN, HYPERION & HO-CHUNK codes.

Professional :

Referee: ApJ, MNRAS, RevMexAA, EPSL, Nature, Nature Communications, Nature Astronomy, Science, PNAS & PASA.
Proposal Reviews: NASA XRP (external - 2015, 2017), VENI fellowships (external, 2015-2016), STFC consolidated grants (external, 2015, 2017), NASA ATP (panel member, 2016, external, 2017), FONDECYT (external, 2016), DFG (external 2017).
Invited review articles: review on transition discs (Published in PASA 2016); review on atmospheric escape and exoplanet evolution (To be published in Annual Reviews)

Meetings/Summer Schools :

Coordinator of Nordita program: 'Photoevaporation of Astrophysical Systems' held at Nordita, Stockholm, Sweden June 2-28 2013

ISIMA Fellow: Summer 2014, University of Toronto.
Participant at the Kavli Summer Program in Astrophysics 2016, UCSC

Students supervised :

Mathias Hudoba de Badyn (University of British Columbia)
NRSEC undergraduate summer fellowship held at CITA (Summer 2012)
Project: 'Thermal Sweeping in the late stages of disc evolution'
Nikhil Mahajan (University of Toronto)
SURP summer student at University of Toronto (Summer 2013)
Project: 'Evaporation of *Kepler* planets'
Aaron Goldberg (McMaster University)
NRSEC undergraduate summer fellowship held at CITA (Summer 2014)
Project: 'Tracing Chondrule Formation'
Jean Teyssandier (Institut d'Astrophysique de Paris)
ISIMA PhD student (Summer 2014) Project: 'Torque on an exoplanet from an anisotropic evaporative wind'
Connor Robinson (Boston University), with Prof. C. Espaillat
(2015→) Project: 'Time-dependent models of magnetically controlled stellar accretion'
Corentin Cadiou (Institut d'Astrophysique de Paris)
Kavli Summer Program in Astrophysics PhD student (Summer 2016) Project: 'Kepler planets - a tale of evaporation'

Selected Invited Talks & Colloquia

31 invited talks in the last 5 years

'Searching for insight in the *Kepler* era'
Exoplanet Seminar, University of Cambridge (October 2017)
'Kepler planets: a tale of evaporation'
Astronomy Colloquium, The Ohio State University (March 2017) 'Sculpting Exoplanets through Evaporation'
AOPP Colloquium, University of Oxford (December 2016)
'Vorticies from low-mass planets'
Fellows at the Frontiers 2016, Northwestern University (September 2016)
-'A review of disc evolution'
Planet Formation & Evolution 2016, Duisburg Germany (March 2016)
-'Kepler planets: a tale of mass-loss'
Astrophysics Colloquium, University of Michigan (February 2016)
-'Boil-off in forming exoplanets'
Protoplanetary disc dynamics, UCLAN Cyprus (June 2015)
-'Models of accreting transition discs'
Lorentz Center, Leiden (March 2015)
-'Evaporating Atmospheres Around Close-in Exoplanets'
AGU, San Francisco (December 2014)
-'Protoplanetary disc evolution'
TAP Colloquium, University of Arizona (April 2014)
-'Dynamics & Evolution of 'transition' discs'
University California, Santa Cruz (November 2013)
-'Photoevaporation of discs'
Nordita, Stockholm (June 2013)

HPC time awarded

XSEDE AST160001 PI: James Owen: 500K core hours for MHD studies of planet evaporation.

Observing time awarded

VLA/14A-218 PI: Anna Scaife, CIs: James Owen, Barbara Ercolano: 18.08hrs on the VLA in configuration A to observe a sample of protoplanetary discs at radio wavelengths

VLA/14A-227 PI: Jeremy Lim; CI: James Owen: 6.8hrs on the VLA in configuration A to image the protoplanetary disc TW-Hydra at radio wavelengths.

VLA/15A-191 PI: Jeremy Lim; CI: James Owen: 7.19hrs on the VLA in configuration A to image protoplanetary discs at radio wavelengths.

ALMA 2015.1.00979.S PI: Ilaria Pascucci; CIs: James Owen, Uma Gorti, David Hollenbach, Luca Ricci, Nathanial Hendler, Cathie Clarke: Cycle 3 Priority B Observations.

e-MERLIN CY3202 PI: Ilaria Pascucci; CIs: James Owen, Uma Gorti, David Hollenbach, Jane Greaves, Olja Panic, Cathie Clarke: Cycle-3 Priority A Observations.

HST-GO-14703 PI: Andrea Banzatti; CIs: James Owen, Ilaria Pascucci, Kevin France, Keri Hoadley: 20 Primary Orbits on Hubble.

Teaching

2008→2011 Supervisor (tutor) for Part IB (second year) Mathematics for Churchill College, University of Cambridge.

2009→2011 Supervisor (tutor) for Part II (third year) Astrophysical Fluid Dynamics for The Cavendish Laboratory, University of Cambridge.

In this role I performed $\sim$ 200 hours of face-to-face teaching in small groups.

Feb. 2016 Guest Lecturer for 'New Discoveries in Astronomy', ASTRO 210, University of Michigan.

2017→ Tutor for 3rd year comprehensive physics paper, Imperial College London

Selected Press

Press for Blackman & Owen (2016):
"A new way to determine the age of stars"
Press for Owen & Mohanty (2016):
"Number of habitable planets could be limited by stifling atmospheres"
Press for Bolmont et al. (2016):
"New exoplanet trio may have been dried out by fiery young star"

References

Professor Cathie Clarke (Institute of Astronomy, University of Cambridge)
cclarke@ast.cam.ac.uk, +44 (0)1223 339087

Professor Yanqin Wu (University of Toronto)
wu@astro.utoronto.ca, +1 416-946-5633

Professor Fred Adams (University of Michigan)
fca@umich.edu, +1 734-647-4320

Professor Jonathan Fortney (University of California, Santa Cruz)
jfortney@ucsc.edu, +1 831-459-1312

Dr Subhanjoy Mohnaty (Imperial College London)
s.mohanty@imperial.ac.uk, +44 20 7594 7553

Professor Barbara Ercolano (Ludwig Maximilan University of Munich)
ercolano@usm.uni-muenchen.de, +49 89-2180-6001

Publications – James E. Owen

Publications: Peer Reviewed Journal Articles

44 papers; 4 by students under my direct supervision; 24 first author papers.

Van Eylen, V.; Agentoft, C.; Lundkvist, M. S.; Kjeldsen, H.; **Owen, J. E.**; Fulton, B. J.; Petigura, E.; Snellen, I. (2017, MNRAS submm. arXiv:1710.05398)
An asteroseismic view of the radius valley: stripped cores, not born rocky

Ercolano, B.; Weber, M.; **Owen, J. E.** (2017, MNRAS accpted. arXiv:1710.1710.03816)
Accreting Transition Discs with large cavities created by X-ray photoevaporation in C and O depleted discs

Owen, J. E. & Wu, Y. (2017, *ApJ 847 29*)
The evaporation valley in the Kepler planets

Espaillat, C. C.; Ribas, A.; McClure, M. K.; Hernandez, J.; **Owen, J. E.**; Avish, N.; Calvet, N.; Franco-Hernandez, R. (2017, *ApJ 844 60*)
An Incipient Debris Disk in the Chamaeleon I Cloud

Owen, J. E. & Lai, D. (2017, *MNRAS 469 2834*)
Generating large misalignments in gapped and binary discs

Robinson, C. E.; **Owen, J. E.**; Espaillat, C. C.; Adams, F. C. (2017 *ApJ 838 100*)
Time Dependent Models of Magnetospheric Accretion onto Young Stars

Owen, J. E. & Kollmeier, J. A (2017, *MNRAS 467 3379*)
Dust traps as planetary birthsites: basics and vortex formation

Bolmont, E.; Selsis, F.; **Owen, J. E.**; Ribas, I.; Raymond, S. N.; Leconte, J. (2017, *MNRAS 464 3728*)
Water loss from Earth-sized planets in the habitable zones of brown dwarfs: implications for the planets of TRAPPIST-1

Ercolano, B. & **Owen, J. E.** (2016, *MNRAS 460 3472*)
Blueshifted [OI] lines from protoplanetary discs: the smoking gun of X-ray photoevaporation

Owen, J. E. & Mohanty, S. (2016, *MNRAS, 459 4088*)
Habitability of Terrestrial-Mass Planets in the HZ of M-Dwarfs. I. H/He-Dominated Atmospheres

Owen, J. E. & Menou, K. (2016, *ApJ 819 L14*)
Disk-fed giant planet formation

Owen, J. E. & Morton, T. D. (2016, *ApJ 819 L10*)
The initial physical conditions of Kepler-36 b & c

Blackman, E. G & **Owen, J. E.** (2016, *MNRAS 458 1548*)
Minimalist coupled evolution model for stellar x-ray activity, rotation, mass loss,

and magnetic field

Haworth, T. J.; Clarke, C. J.; **Owen, J. E** (2016, *MNRAS 457 1905*)
Rapid radiative clearing of protoplanetary discs

Owen, J. E. (Invited Review, 2016, *PASA 33 e005*)
The origin and evolution of transition discs: successes, problems and open questions

Owen, J. E. & Adams, F. C. (2016, *MNRAS 456 3053*)
Hot Jupiter Breezes: Time-dependent Outflows from Extrasolar Planets

Owen, J. E.; Wu, Y. (2016 *ApJ 817 107*)
Atmospheres of low mass planets: the "boil-off"

Owen, J. E.; Alvarez, M. A. (2016 *ApJ 816 34*)
UV driven evaporation of close-in planets: energy-limited; recombination-limited and photon-limited flows

Rosotti, G. P.; Ercolano, B.; **Owen, J. E.** (2015 *MNRAS 454 2173*)
The long-term evolution of photoevaporating transition discs with giant planets

Goldberg, A. Z.; **Owen, J. E.**; Jacquet, E. (2015, *MNRAS 452 4054*)
Chondrule Transport in Protoplanetary Disks

Ercolano, B.; Koepferl, C.; **Owen, J. E.**; Robitaille, T. (2015, *MNRAS 452 3689*)
Far-infrared signatures and inner hole sizes of protoplanetary discs undergoing inside-out dust dispersal

Teyssandier, J.; **Owen, J. E.**; Adams, F. C.; Quillen, A. C. (2015, *MNRAS 452 1743*)
Torque on an exoplanet from an anisotropic evaporative wind

Owen, J. E.; Jacquet E. (2015, *MNRAS 446 3285*)
Astro & cosmo-chemical consequences of accretion bursts I: the D/H ratio of water

Clarke, C. J.; **Owen, J. E.** (2015, *MNRAS 446 2944*)
Probing X-ray photoevaporative winds through their interaction with ionising radiation in cluster environments: the case for X-ray proplyds

Owen, J. E.; Armitage P. J. (2014, *MNRAS 445 2800*)
Importance of thermal diffusion in the gravomagnetic limit cycle

Owen, J. E.; Adams, F. C. (2014, *MNRAS 444 3761*)
Magnetically controlled mass-loss from extrasolar planets in close orbits

Owen, J. E. (2014, *ApJ 790 L7*)
Snow Lines as Probes of Turbulent Diffusion in Protoplanetary Disks

Owen, J. E. (2014, *ApJ 789 59*)
Accreting Planets as Dust Dams in 'Transition' Disks

Ercolano, B.; Mayr, D.; **Owen, J. E.**; Rosotti, G.; Manara, C. (2014, *MNRAS 439 256*)
The Mdot-Mstar relation of pre-main sequence stars: a consequence of X-ray driven disc evolution

Owen, J. E.; Wu, Y.; (2013, *ApJ 775 105*)
Kepler planets: a tale of evaporation

Owen, J. E.; Hudoba de Badyn, M.; Clarke, C. J.; Robins, L; (2013, *MNRAS 436 1430*)
Characterising thermal sweeping: a rapid disc dispersal mechanism

Owen, J. E.; Scaife, A. M. M.; Ercolano B.; (2013, *MNRAS 434 3378*)
Testing protoplanetary disc dispersal with radio emission

Clarke, C. J.; **Owen, J. E.**; (2013, *MNRAS 433 L69*)
Evolutionary constraints on the planetary origin for transition discs

Rosotti, G. P.; Ercolano, B.; **Owen, J. E.**; Armitage, P. J.; (2013, *MNRAS 430 1392*)
The interplay between X-ray photoevaporation and planet formation

Owen, J. E.; Clarke, C. J.; (2012, *MNRAS 426 L91*)
Two populations of transition discs?

Owen, J. E.; Jackson, A. P.; (2012, *MNRAS 425 2931*)
Planetary evaporation by UV & X-rays radiation: basic hydrodynamics

Owen, J. E.; Clarke, C. J.; Ercolano B.; (2012, *MNRAS 422 1880*)
On the theory of disc photoevaporation

Pascucci, I.; Sterzik, M.; Alexander, R. D.; Alencar, S. H. P.; Gorti, U.; Hollenbach, D.; **Owen, J. E.**; Ercolano, B.; Edwards; (2011, *ApJ 736 13*)
The photoevaporative wind from the disk of TW Hya

Ercolano, B.; Bastian, N.; Spezzi, L. & **Owen, J. E.**; (2011, *MNRAS 416 439*)
On the lifetime of discs around late type stars

Owen, J. E.; Ercolano, B. & Clarke, C. J.; (2011, *MNRAS 412 13*)
Protoplanetary Disc Evolution and Dispersal: the implications of X-ray photoevaporation

Owen, J. E.; Ercolano, B. & Clarke, C. J.; (2011, *MNRAS 411 1104*)
The imprint of photoevaportion on edge on discs

Graves, S. F.; Richer, J. S.; Buckle, J. V.; Duarte-Cabral, A.; Fuller, G. A.; Hogerheijde, M. R.; **Owen, J. E.**; Brunt, C.; Butner, H. M.; Cavanagh, B.; Chrysostomou, A.; Curtis, E. I.; Davis, C. J.; Etxaluze, M.; Di Francesco, J.; Friberg, P.; Friesen, R. K.; Greaves, J. S.; Hatchell, J.; Johnstone, D.; Matthews, B.; Matthews, H.; Matzner, C. D.; Nutter, D.; Rawlings, J. M. C.; Roberts, J.

F.; Sadavoy, S.; Simpson, R. J.; Tothill, N. F. H.; Tsamis, Y. G.; Viti, S.; Ward-Thompson, D.; White, G. J.; Wouterloot, J. G. A. & Yates, J.; (2010, *MNRAS 409 1412*)
The JCMT legacy survey of the Gould belt: a first look at Serpens with HARP

Ercolano, B. & **Owen, J. E.** (*2010 MNRAS 406, 1553*)
Theoretical spectra of photoevaporating protoplanetary discs: an atlas of atomic and low-ionization emission lines

Owen, J. E.; Ercolano, B.; Clarke, C. J. & Alexander, R. D. (2010, *MNRAS 401, 1415*) Radiation-hydrodynamic models of X-ray and EUV photoevaporating protoplanetary discs

Publications: Contributions & Proceedings

Adams, F.C.; **Owen, J. E.** (2014, proceedings of 'Cool Stars 18', arXiv:1409.6544)
Magnetically Controlled Outflows from Planets

Owen, J. E.; Ercolano, B.; Clarke, C. J. (2012, proceedings of 'The Labyrinth of Star Formation', arXiv:1208.6243)
Radiative Transfer in Star Formation: Testing FLD & Hybrid Methods

Scaife, A. M. M.; **Owen, J. E.**; Ercolano, B.; Rumsey, C.; (2012, *The Astronomer's Telegram, 4294*)
Radio flare from FF Tau