

CURRICULUM VITAE – JAMES E. OWEN, updated March 2022

PERSONAL INFORMATION	James Edward Owen Astrophysics Group, Blackett Laboratory, Imperial College London Prince Consort Rd, London, SW7 2BB, U.K. Tel: +44 20 7594 45785, E-mail: james.owen@imperial.ac.uk
PROFESSIONAL EXPERIENCE	Senior Lecturer (Previously Lecturer) December 2018 → present Imperial College London Royal Society University Research Fellow : July 2017 → present 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.
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
AWARDS & PRIZES	2021 Royal Astronomical Society Fowler Award ERC Starting Grant (Awarded 2019) 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 Churchill College Scholar, 2006 → 2009
SKILLS	Professional : <u>Referee</u> : ApJ, MNRAS, A&A, RevMexAA, EPSL, Galaxies, Nature, Nature Communications, Nature Astronomy, Science, PNAS & PASA. <u>Proposal Reviews</u> : Panellist for NASA grant reviews (USA), External reviewer for NASA grants (USA), External reviewer for FONDECYT grants (Chile), External reviewer for OPTICON observing proposals (EU), External reviewer for STFC Rutherford Fellowships (UK), External reviewer for DFG grants (Germany), External reviewer of STFC consolidated grants (UK), External reviewer for VENI fellowships (The Netherlands), External reviewer for STFC DiRAC HPC grants (UK), External reviewer for ERC (EU). <u>Invited review articles as lead author</u> : review on transition discs (Published in PASA 2016); review on atmospheric escape and exoplanet evolution (Published in Annual Reviews 2019); review on planet formation and evolution (Space Science Reviews, 2020)

GRANTS AWARDED AS PI **Research Fellow Enhancement Award** 2020, RGF\EA\201038, “Simulating the planet forming environments”, Funds computing equipment.

ERC Starting Grant 2019, PEVAP, "Exoplanet evaporation as a window into planetary origins", € 1.5 million 5-year grant.

Research Grants for Research Fellows 2017, RGF\R1\180046, “The birth of exoplanets’ gaseous envelopes”, Funds a four-year PhD studentship.

Research Fellows Enhancement Award 2017, RGF\EA\180207, “Simulating asymmetric planet forming discs”, Funds a four-year PhD studentship.

HPC TIME AWARDED AS PI **XSEDE AST160001** 2016-2017, 500K core hours for MHD studies of planet evaporation.

DiRAC dp100 2018-2021, 4.1M core hour thematic project.

DiRAC dp100 continued 2021-2024, 28M core hour thematic project.

OBSERVING TIME AWARDED AS CO-I **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, Nathaniel 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.

NASA Keck key strategic mission support 2018-2020 : California Kepler Survey Team: 20 Nights on the Keck Telescope.

Keck Caltech Time 2018A : California Kepler Survey Team: 3.5 Nights on the Keck Telescope.

NASA key strategic mission support 2019-2021 : Radial velocities for multi-planet system, 20 Nights on the Keck Telescope.

ALMA 2019.1.00250 : PI: Thomas Haworth; CIs: James Owen, E. Macias, C. Espaillat, M. Ansdell, T. Haworth, M. Jankovic, S. Facchini, J. Williams, C. Clarke, J. Kim, Cycle 7 Priority C Observations

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.

2017→2019 Tutor for 3rd year comprehensive physics paper, Imperial College London

2018→ Lecturer for 3rd Astrophysics course, 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 stiffening atmospheres”](#)

Press for Bolmont et al. (2016):

[“New exoplanet trio may have been dried out by fiery young star”](#)

Press for de Wit et al. (2018):

[“TRAPPIST-1 exoplanets could harbour significant amounts of water”](#)

PUBLICATIONS – JAMES E. OWEN

PUBLICATIONS: 68 papers

PEER REVIEWED

JOURNAL ARTICLES

Van Eylen, V.; Astudillo-Defru, M.; Bonfils, X.; Livingston, J.; Hirano, T.; Luque, R.; Lam, K. W. F.; Justesen, A. B.; Winn, J. N.; Gandolfi, D.; Nowak, G.; Palle, E.; Albrecht, S.; Dai, F.; Campos Estrada B.; **Owen, J. E.**; Foreman-Mackey, D.; Fridlund, M.; Korth, J.; Mathur, S. Forveille, T.; Mikal-Evans, T.; Osborne, H. L. M.; Ho, C. S. K.; Almenara, J. M.; Artigau, E.; Barragán, O.; Bouchy, F.; Cabrera, J.; Caldwell, D. A.; Charbonneau, D.; Chaturvedi, P.; Cochran, W. D.; Csizmadia, S.; Damasso, M.; Delfosse, X.; De Medeiros, J. R.; D'Áaz, R. F.; Doyon, R.; Esposito, M.; Fürész, G.; Figueira, P.; Georgieva, I.; Goffo, E.; Grziwa, S.; Guenther, E.; Hatzes, A. P.; Jenkins, J. M.; Kabath, P.; Knudstrup, E.; Latham, D. W.; Lavié, B.; Lovis, C.; Mennickent, R. E.; Mullally, S. E.; Murgas, F.; Narita, N.; Pepe, F. A.; Persson, C. M.; Redfield, S.; Ricker, G. R.; Santos, N. C.; Seager, S.; Serrano, L. M.; Smith, A. M. S.; Suárez Mascareno, A.; Subjak, J.; Twicken, J. D.; Udry, S.; Vanderspek, R.; Zapatero Osorio, M. R. (2021 *MNRAS in press* arXiv:2101.01593)

Masses and compositions of three small planets orbiting the nearby M dwarf L231-32 (TOI-270) and the M dwarf radius valley

Jankovic, M. R.; **Owen, J. E.**; Mohanty, S.; Tan, J. C. (2021 *MNRAS in press* arXiv:2102.12831)

MRI-active inner regions of protoplanetary discs. I. A detailed model of disc structure

Rogers, J. G; **Owen, J. E.** (2021 *MNRAS* 503 1526)

Unveiling the Planet Population at Birth

Robinson, C. E.; Espaillat, C. C.; **Owen, J. E.** (2021 *ApJ* 908 16)

Synthetic Light Curves of Accretion Variability in T Tauri Stars

Bean, J. L.; Raymond, S. N.; **Owen, J. E.** (2021 *JGR: Planets*, 126, id:e06639)

The nature and origins of sub-Neptune size planets

Owen, J. E.; Shaikhislamov, I. F.; Lammer, H.; Fossati, L.; Khodachenko, M. L. (2020 *Space Science Reviews*, 216, 129)

Hydrogen dominated atmospheres on terrestrial mass planets: evidence, origin and evolution

Owen, J. E. (2020 *MNRAS* 498 5030)

Constraining the entropy of formation from young transiting planets

Turbet, M.; Bolmont, E.; Bourrier, V.; Demory, B.-O.; Lecante, J.; **Owen, J. E.**; Wolf, E. (2020 *Space Science Reviews*, 216, 100)

A Review of Possible Planetary Atmospheres in the TRAPPIST-1 System

Owen, J. E. (2020 *MNRAS* 495 3160)

Snow-lines can be thermally unstable

Dempsey, R; Zakamska, N. L.; **Owen, J. E.** (2020 *MNRAS* 495 1172)

Formation of Orion Fingers

Haworth, T. J.; Cadman, J.; Meru, F.; Hall, C.; Albertini, E.; Forgan, D.; Rice, K.; **Owen, J. E.** (2020 *MNRAS* 494 4130)

Massive discs around low-mass stars

Booth, R. A.; **Owen, J. E.** (2020 *MNRAS* 493 5079)

Fingerprints of giant planets in the composition of solar twins

Haworth, T. J.; **Owen, J. E.** (2020 *MNRAS* 492 5030)

The Observational Anatomy of Externally Photoevaporating Planet-Forming Discs I: Atomic Carbon

Owen, J. E.; Campos Estrada, B. (2020 *MNRAS* 491 5287)

Testing exoplanet evaporation with multi-transiting systems

Owen, J. E.; Adams, F. C. (2019, *MNRAS* 490 15)

Effects of Magnetic Fields on the Location of the Evaporation Valley for Low-Mass Exoplanets

Owen, J. E.; Kollmeier, J. A. (2019, *MNRAS* 487 3702)

Radiation pressure clear-out of dusty photoevaporating discs

Picogna G.; Ercolano, B.; **Owen, J. E.**; Weber, M. L. (2019, *MNRAS* 487 691)

The dispersal of protoplanetary discs - I. A new generation of X-ray photoevaporation models

Owen, J. E. (2019, invited review, Annual Reviews in Earth and Planetary Sciences, 47 67)

Atmospheric Escape and the Evolution of Close-in Exoplanets

Jankovic, M.; **Owen, J. E.**; Mohanty S. (2019, *MNRAS* 484 2296)

Close-in Super-Earths: The first and the last stages of planet formation in an MRI-accreting disc

Owen, J. E. & Murray-Clay, R. (2018, *480* 2206)

Metallicity-Dependent Signatures in the Kepler Planets

Owen, J. E. & Lai, D. (2018, *MNRAS* 479 5012)

Photoevaporation and High-Eccentricity Migration Created the Sub-Jovian Desert

Van Eylen, V.; Agentoft, C.; Lundkvist, M. S.; Kjeldsen, H.; **Owen, J. E.**; Fulton, B. J.; Petigura, E.; Snellen, I. (2018, *MNRAS* 479 4786)

An asteroseismic view of the radius valley: stripped cores, not born rocky

de Wit, J.; Wakeford, H. R.; Lewis, N.; Delrez, L.; Gillon, M.; Selsis, F.; Lecante, J.; Demory, B.-O.; Belmont, E.; Bourrier, V.; Burgasser, A. J.; Grimm, S.; Jehin, E.; Lederer, S. M.; **Owen, J. E.**; Stamenkovic, V.; Triaud, A. H. M. J. (2018, *Nature Astronomy*, doi:10.1038/s41550-017-0374-z)

Atmospheric reconnaissance of the habitable-zone Earth-sized planets orbiting TRAPPIST-1

Mohanty, S.; Jankovic, M. R.; Tan, J. C.; **Owen, J. E.** (2018, *ApJ* 861 144)
Inside-Out Planet Formation. V. Structure of the Inner Disk as Implied by the MRI

Hendler, N. P.; Pinilla, P.; Pascucci, I.; Pohl, A.; Mulders, G.; Henning, T.; Dong, R.; Clarke, C. J.; **Owen, J. E.**; Hollenbach D. (2018, *MNRAS* 475 62)
A likely planet-induced gap in the disk around T Cha

Ercolano, B.; Weber, M.; **Owen, J. E.** (2018, *MNRAS* 473 64)
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

Espaillet, 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.**; Espaillet, 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.; Lecote, 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 photoevaporation 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