Christopher Clark

Curriculum Vitæ

Contact Information

Address:	School of Physics & Astronomy, Cardiff University Queen's Buildings, The Parade Cardiff CF24 3AA United Kingdom
Telephone:	(+44)7922 021691
Email:	cjrc88@gmail.com
Website:	cjrclark.uk

Academic History

2014–Present | **Postdoctoral Research Associate** | Cardiff University
Part of the EU DustPedia project; responsible for reducing *Herschel* data, assembling ancillary data, and performing multiwavelength photometry, to construct a database with fluxes and imagery of 876 galaxies in 43 UV-submm bands. Simultaneously conducting independent research on the nature and evolution of the ISM in low-z galaxies, and on the properties of dusty stars in the Milky Way, along with carrying out management roles in JINGLE large program.
Supervisor: Prof Jonathan Davies | (+44)2920 875255 | Jonathan.Davies@astro.cf.ac.uk

2011–2015 | **PhD Astronomy** | Cardiff University
Thesis: *The Origins and Evolution of Cosmic Dust in Galaxies with the Herschel Space Observatory*
PhD consisted of two main investigations. Firstly, using *Herschel* data to determine if recent Milky Way supernovæ manufactured large quantities of dust; whilst Type-II supernovæ did, Type-Ia did not. Secondly, exploiting *Herschel*-ATLAS to perform the first blind, dust-selected, volume-limited survey of local galaxies, revealing that dust selection is a very effective way of identifying immature galaxies with a host of unusual properties. Thesis Link |
Supervisor: Prof Haley Gomez | (+44)2920 874058 | Haley.Gomez@astro.cf.ac.uk

2011 | **Research Assistant** | Cardiff University
Employed to continue 4th-year undergraduate project work for publication.

2007–2011 | **MPhys Astrophysics 2:1** | Cardiff University
4th-year project: *Searching with Herschel for Dust Created by Kepler's Supernova*
Supervisors: Dr Peter Hargrave & Prof Haley Gomez
3rd-year project: *Stacking Submillimetre-Undetected Elliptical Galaxies in BLAST Observations*
Supervisor: Dr Enzo Pascale

2003–2007 | **A-Levels & GCSEs** | Helston School
Recieved 4 A-Levels (Maths, Physics, History, and Theology) and 11 GCSEs (including 9 A/A*)

Teaching

2014–2016 **Project student supervision**
Primary supervisor of a Master's student, co-supervisor of three 3rd-year undergraduates

2015–2017 **Undergraduate teaching** | *Computational Skills for Problem Solving*
In charge of teaching weekly 1st-year Python class

Grants & Awards

2017 **€2 100** | European Research Council
Travel funds to attend summer school in astrostatistics

2016 **£12 205** | Data Innovation Research Institute
Seedcorn Fund | *Astronomical Oncology – Astronomical Image Analysis Techniques for Cancer Microscopy*

2013 **£400** | Cardiff University
Bessie Jones Prize for Most Outstanding Research Student

2012 **€550** | European Space Agency
Competitive ESA conference sponsorship

2007 **£4 000** | Institute of Physics
IoP Undergraduate Bursary

Successful Telescope Proposals

IRAM 30 m (NIKA-2)	**Principal Investigator**	Pilot study for nearby galaxy observations with NIKA-2, mapping continuum emission of IC 342 at 1.2 & 2 mm
JCMT (all instruments)	**Leader of Stacking Project**	NESS survey of Galactic evolved stars
JCMT (SCUBA-2/HARP-B)	Co-Author	HASHTAG program mapping dust and gas across M31
JCMT (SCUBA-2/RxA)	**Executive Team of Large Program**	JINGLE statistical 850 μm & ^{12}CO(2-1) local-Universe survey of gas and dust
IRAM 30 m (NIKA-2)	**Executive Team of Large Program**	IMEGIN 1.2 & 2.0 mm survey of nearby galaxies with new instrument
ALMA	Co-Author	CO and dust continuum observations of nearby galaxies to uncover 'the secret lives of BADGRS'
JCMT (HARP-B)	Co-Author	MALATANG large program mapping dense gas in nearby galaxies via HCN & HCO+ emission
JCMT (SCUBA-2)	Second Author	850 μm photometry of local galaxies containing very cold dust
IRAM 30 m (EMIR)	Co-Author	^{12}CO(1-0) spectroscopy of local galaxies with low dust-to-gas ratios
VLA	Co-Author	HI mapping of immature gas-dominated nearby galaxies

Observing Experience

JCMT (SCUBA-2/HARP-B)	450 μm, 850 μm, and ^{12}CO(3-2) mapping of M 31 for HASHTAG large program 5 Nights at Telescope (2017)
IRAM 30 m (NIKA-2)	1.2 & 2.0 mm continuum observations of M 99 for NIKA2 science verification 5 Nights at Telescope (2016-2017)
JCMT (RxA)	^{12}CO(2-1) spectroscopy of low-redshift galaxies for the JINGLE large program 5 Nights at Telescope (2016)
JCMT (SCUBA-2)	850 μm observations of local galaxies containing very cold dust 8 Nights at Telescope (2014)
Mopra 22 m	^{12}CO(1-0) spectroscopy of dusty galaxies in the Fornax Cluster 7 Nights at Telescope (2012)

Programming Skills

Python	**Primary language** | Highly capable; especially proficient in statistical methods, image processing, data visualisation, and general observational astronomical use. Also teach Python in 1st-year undergraduate course.
IDL	**Seconday language** | Adept in general numerical and astronomical applications.
R	Versed in data-analysis and statistical use.
FORTRAN90	Undergraduate-level ability in basic use.
LaTeX	Competent in the creation of high-quality scientific and academic documents.
Git	Version control for all code development, made freely available on GitHub. GitHub Link |

Scholarly Presentations

2018 **Symposium Chair** | *The ISM as a Window onto Galaxy Evolution*
European Week of Space Science 2018 | Liverpool

2017 **Seminar** | *The Guilty Secrets of Dust in Nearby Galaxies*
East Asian Observatory | Hilo

2016 **Poster** | *DustPedia: A Definitive Study of Dust in the Local Universe*
RAS Specialist Meeting: Multiwavelength Extragalactic Surveys | London

2015 **Talk & Local Organising Committee** | *Truths for a PhD in Astronomy*
Science & Technology Facilities Council Summer School in Astronomy | Cardiff

2015 **Talk** | *Young, Blue, and Cold - Blind Surveys of Nearby Galaxies with Herschel-ATLAS*
RAS National Astronomical Meeting | Llandudno

2015 **Talk** | *Young, Blue, and Cold - Blind Surveys of Nearby Galaxies with Herschel-ATLAS*
Gas, Dust, and Star-Formation in Galaxies from the Local to Far Universe | Crete

2013 **Poster** | *Herschel-ATLAS: A Blind Local Universe Survey Reveals Cold Immature Galaxies*
The Life Cycle of Dust in the Universe | Taipei

2013 **Talk** | *A Blind Survey of the Local Dusty Universe with Herschel-ATLAS*
The Universe Explored By Herschel | Noordwijk

2013 **Talk** | *A Blind Survey of the Local Dusty Universe with Herschel-ATLAS*
RAS National Astronomy Meeting | St Andrews

2013 **Talk** | *Dust in Historical Supernova Remnants with Herschel*
RAS National Astronomy Meeting | St Andrews

2012 **Poster** | *Dusty Stars in Herschel-ATLAS*
RAS Specialist Meeting: Origins of Dust in the Herschel & ALMA Era | London

Other Experience

Science Outreach	>150 hours engaged in science outreach activities with the general public; including public talks, science fairs, school events, agricultural shows, writing articles for university media, and radio interviews.
Scout Association	5 years volunteering as an assistant leader at 1st Helston Scout Troop, 2004–2009; attained Chief Scout's Award (equivalent to Duke of Edinburgh's Award).
University Challenge	Bested 90% of teams to reach the televised stage of the BBC competition, representing Cardiff University as an undergraduate.

Publications

First Author

Clark C. J. R., et al., 2017, *DustPedia: Multiwavelength Photometry and Imagery of 875 Nearby Galaxies in 42 Ultraviolet–Microwave Bands*, accepted for publication in A&A ADS Link |

Clark C. J. R., et al., 2016, *An Empirical Determination of the Dust Mass Absorption Coefficient, κ_d, Using the Herschel Reference Survey*, MNRAS 459 1646 ADS Link |

Clark C. J. R., et al., 2015, *Herschel-ATLAS: The Surprising Diversity of Dust-Selected Galaxies in the Local Submillimetre Universe*, MNRAS 452 397 ADS Link |

Clark C. J. R., 2015, *On the Origins of Cosmic Dust and the Evolution of Nearby Galaxies with the Herschel Space Observatory*, PhD Thesis ADS Link |

Clark C. J. R., et al., 2014, *A Blind Survey of the Local Dusty Universe with Herschel-ATLAS*, in proceedings of 'The Life Cycle of Dust in the Universe', PoS LCDU2013 073 ADS Link |

Co-Author

Rigby A. J., et al., 2017, *A NIKA view of two star-forming infrared dark clouds: dust opacity variations and mass concentration*, submitted for publication in A&A

Saintonge V., et al., 2017, *JINGLE, a JCMT Legacy Survey of Dust and Gas for Galaxy Evolution Studies: I. Survey Overview and First Results*, submitted for publication in MNRAS

Casasola V., et al., 2017, *Radial Distribution of dust, stars, gas, and star-formation rate in DustPedia face-on galaxies*, A&A 605 A18 33 ADS Link |

Rho J., et al., 2017, *A Dust Twin of Cas A: Cool Dust and Pre-Solar Grains of Silica Revealed in the Supernova Remnant G54.1+0.3*, submitted for publication in MNRAS ADS Link |

de Vis P., et al., 2017, *Using dust, gas and stellar mass selected samples to probe dust sources and sinks in low metallicity galaxies*, accepted for publication in MNRAS ADS Link |

Davies J. I., et al., 2016, *DustPedia - A Definitive Study of Cosmic Dust in the Local Universe*, PASP 129 044102 ADS Link |

Bianchi S., et al., 2016, *The Herschel Virgo Cluster Survey. XX. Dust and Gas in the Foreground Galactic Cirrus*, A&A 597 A130 25 ADS Link |

de Vis P., et al., 2016, *Herschel-ATLAS: Revealing Dust Build-Up and Decline Across Gas-, Dust- and Stellar-Mass Selected Samples: I. Scaling Relations*, MNRAS 464 4680 ADS Link |

Eales A., et al., 2015, *H-ATLAS/GAMA: Quantifying the Morphological Eolution of the Galaxy Population using Cosmic Calorimetry*, MNRAS 452 3489 ADS Link |

Rowlands K., et al., 2014, *Herschel-ATLAS: Properties of Dusty Massive Galaxies at Low and High Redshifts*, MNRAS 441 1017 ADS Link |

Peason E. A., et al., 2013, *Herschel-ATLAS: estimating redshifts of Herschel sources from sub-mm fluxes*, MNRAS 435 2753 ADS Link |

Bourne N., et al., 2013, *Herschel-ATLAS: correlations between dust and gas in local submm-selected galaxies*, MNRAS 436 479 ADS Link |

Agius N. K., et al., 2013, *GAMA/H-ATLAS: linking the properties of submm detected and undetected early-type galaxies: I. z≤ 0.06 sample*, MNRAS 431 1929 ADS Link |

López-Caniego M., et al., 2013, *Mining the Herschel-ATLAS: submillimetre-selected blazars in equatorial fields*, MNRAS 430 1566 ADS Link |

Gomez H. L., et al., 2012, *A Cool Dust Factory in the Crab Nebula: A Herschel Study of the Filaments*, ApJ 760 96 ADS Link |

Gomez H. L. & Clark C. J. R., et al., 2012, *Dust in Historical Galactic Type-Ia Supernova Remnants with Herschel*, MNRAS 420 3557 ADS Link |