

# CHRISTOPHER CLARK

## CURRICULUM VITÆ

### CONTACT INFORMATION

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### ACADEMIC HISTORY

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- 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 875 galaxies in 42 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](mailto: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](mailto:Haley.Gomez@astro.cf.ac.uk)
- 2011 | **Research Assistant** | CARDIFF UNIVERSITY  
Employed to continue 4<sup>th</sup>-year undergraduate project work for publication.
- 2007–2011 | **MPhys Astrophysics 2:1** | CARDIFF UNIVERSITY  
4<sup>th</sup>-year project: *Searching with Herschel for Dust Created by Kepler's Supernova*  
SUPERVISORS: DR PETER HARGRAVE & PROF HALEY GOMEZ  
3<sup>rd</sup>-year project: *Stacking Submillimetre-Undetected Elliptical Galaxies in BLAST Observations*  
SUPERVISOR: DR ENZO PASCALE
- 2003–2007 | **A-Levels & GCSEs** | HELSTON SCHOOL  
Attained 4 A-Levels (Maths, Physics, History, and Theology) and 11 GCSEs (including 9 A/A\*)

### TEACHING

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- 2014–2016 | **Project student supervision**  
Primary supervisor of a Master's student, co-supervisor of three 3<sup>rd</sup>-year undergraduates
- 2015–2017 | **Undergraduate teaching** | *Computational Skills for Problem Solving*  
In charge of teaching weekly 1<sup>st</sup>-year Python class

## GRANTS & AWARDS

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2017	<b>€2 100</b>   EUROPEAN RESEARCH COUNCIL Travel funds to attend summer school in astrostatistics
2016	<b>£12 205</b>   DATA INNOVATION RESEARCH INSTITUTE Seedcorn Fund   <i>Astronomical Oncology – Astronomical Image Analysis Techniques for Cancer Microscopy</i>
2013	<b>£400</b>   CARDIFF UNIVERSITY Bessie Jones Prize for Most Outstanding Research Student
2013	<b>€550</b>   EUROPEAN SPACE AGENCY Competitive ESA conference sponsorship
2007	<b>£4 000</b>   INSTITUTE OF PHYSICS IoP Undergraduate Bursary

## SUCCESSFUL TELESCOPE PROPOSALS

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IRAM 30 m (NIKA-2)	<b>PRINCIPAL INVESTIGATOR</b>   Pilot study for nearby galaxy observations with NIKA-2, mapping continuum emission of IC 342 at 1.2 & 2 mm
JCMT (ALL INSTRUMENTS)	CO-AUTHOR, LEADING 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)	<b>EXECUTIVE TEAM OF LARGE PROGRAM</b>   JINGLE statistical 850 $\mu\text{m}$ & $^{12}\text{CO}(2-1)$ local-Universe survey of gas and dust
IRAM 30 m (NIKA-2)	<b>EXECUTIVE TEAM OF LARGE PROGRAM</b>   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 <sup>+</sup> emission
JCMT (SCUBA-2)	SECOND AUTHOR   850 $\mu\text{m}$ photometry of local galaxies containing very cold dust
IRAM 30 m (EMIR)	CO-AUTHOR   $^{12}\text{CO}(1-0)$ spectroscopy of local galaxies with low dust-to-gas ratios
VLA	CO-AUTHOR   H <sub>i</sub> mapping of immature gas-dominated nearby galaxies

## OBSERVING EXPERIENCE

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JCMT (SCUBA-2/HARP-B)	450 $\mu\text{m}$ , 850 $\mu\text{m}$ , and $^{12}\text{CO}(3-2)$ 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)	$^{12}\text{CO}(2-1)$ spectroscopy of low-redshift galaxies for the JINGLE large program 5 NIGHTS AT TELESCOPE (2016)
JCMT (SCUBA-2)	850 $\mu\text{m}$ observations of local galaxies containing very cold dust 8 NIGHTS AT TELESCOPE (2014)
MOPRA 22 m	$^{12}\text{CO}(1-0)$ spectroscopy of dusty galaxies in the Fornax Cluster 7 NIGHTS AT TELESCOPE (2012)

## PROGRAMMING SKILLS

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PYTHON	<b>Primary language</b>   Highly capable; especially proficient in statistical methods, image processing, data visualisation, and general observational astronomical use. Also teach Python in 1 <sup>st</sup> -year undergraduate course.
IDL	<b>Seconday language</b>   Adept in general numerical and astronomical applications.
R	Versed in data-analysis and statistical use.
FORTRAN90	Undergraduate-level ability in basic use.
L <sup>A</sup> T <sub>E</sub> X	Competent in the creation of high-quality scientific and academic documents.
GIT	Version control for all code development, made freely available on GitHub. <a href="#">GitHub Link</a>

## SCHOLARLY PRESENTATIONS

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2018	<b>Symposium Organiser</b>   <i>The ISM as a Window onto Galaxy Evolution</i> EUROPEAN WEEK OF SPACE SCIENCE 2018   LIVERPOOL
2017	<b>Seminar</b>   <i>The Guilty Secrets of Dust in Nearby Galaxies</i> EAST ASIAN OBSERVATORY   HILO
2016	<b>Poster</b>   <i>DustPedia: A Definitive Study of Dust in the Local Universe</i> RAS SPECIALIST MEETING: MULTIWAVELENGTH EXTRAGALACTIC SURVEYS   LONDON
2015	<b>Talk &amp; Local Organising Committee</b>   <i>Truths for a PhD in Astronomy</i> SCIENCE & TECHNOLOGY FACILITIES COUNCIL SUMMER SCHOOL IN ASTRONOMY   CARDIFF
2015	<b>Talk</b>   <i>Young, Blue, and Cold - Blind Surveys of Nearby Galaxies with Herschel-ATLAS</i> RAS NATIONAL ASTRONOMICAL MEETING   LLANDUDNO
2015	<b>Talk</b>   <i>Young, Blue, and Cold - Blind Surveys of Nearby Galaxies with Herschel-ATLAS</i> GAS, DUST, AND STAR-FORMATION IN GALAXIES FROM THE LOCAL TO FAR UNIVERSE   CRETE
2013	<b>Poster</b>   <i>Herschel-ATLAS: A Blind Local Universe Survey Reveals Cold Immature Galaxies</i> THE LIFE CYCLE OF DUST IN THE UNIVERSE   TAIPEI
2013	<b>Talk</b>   <i>A Blind Survey of the Local Dusty Universe with Herschel-ATLAS</i> THE UNIVERSE EXPLORED BY HERSCHEL   NOORDWIJK
2013	<b>Talk</b>   <i>A Blind Survey of the Local Dusty Universe with Herschel-ATLAS</i> RAS NATIONAL ASTRONOMY MEETING   ST ANDREWS
2013	<b>Talk</b>   <i>Dust in Historical Supernova Remnants with Herschel</i> RAS NATIONAL ASTRONOMY MEETING   ST ANDREWS
2012	<b>Poster</b>   <i>Dusty Stars in Herschel-ATLAS</i> RAS SPECIALIST MEETING: ORIGINS OF DUST IN THE HERSCHEL & ALMA ERA   LONDON

## OTHER EXPERIENCE

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SCIENCE OUTREACH	I have spent >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.
JAM MAKING	I create my own chilli jams (from home-grown chillies), which I now sell to a small number of local cafes, who feature it in their dishes.
SCOUT ASSOCIATION	5 years volunteering as an assistant leader at 1 <sup>st</sup> Helston Scout Troop; 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

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FIRST AUTHOR	Clark C. J. R., et al., 2018, <i>DustPedia: Multiwavelength Photometry and Imagery of 875 Nearby Galaxies in 42 Ultraviolet–Microwave Bands</i> , A&A 609 A37 <a href="#">ADS Link</a>
	Clark C. J. R., et al., 2016, <i>An Empirical Determination of the Dust Mass Absorption Coefficient, <math>\kappa_d</math>, Using the Herschel Reference Survey</i> , MNRAS 459 1646 <a href="#">ADS Link</a>
	Clark C. J. R., et al., 2015, <i>Herschel-ATLAS: The Surprising Diversity of Dust-Selected Galaxies in the Local Submillimetre Universe</i> , MNRAS 452 397 <a href="#">ADS Link</a>
	Clark C. J. R., 2015, <i>On the Origins of Cosmic Dust and the Evolution of Nearby Galaxies with the Herschel Space Observatory</i> , PhD Thesis <a href="#">ADS Link</a>
	Clark C. J. R., et al., 2014, <i>A Blind Survey of the Local Dusty Universe with Herschel-ATLAS</i> , in proceedings of ‘The Life Cycle of Dust in the Universe’, PoS LCDU2013 073 <a href="#">ADS Link</a>
CO-AUTHOR	Beeston R., et al., 2018, <i>GAMA/H-ATLAS: The Local Dust Mass Function and Cosmic Density as a Function of Galaxy Type - A Benchmark for Models of Galaxy Evolution</i> , submitted for publication in MNRAS <a href="#">ADS Link</a>
	Dunne L., et al., 2018, <i>The Unusual ISM in Blue and Dusty Gas Rich Galaxies (BADGRS)</i> , submitted for publication in MNRAS
	Rigby A. J., et al., 2018, <i>A NIKA view of two star-forming infrared dark clouds: dust opacity variations and mass concentration</i> , accepted for publication in A&A
	Saintonge V., et al., 2017, <i>JINGLE, a JCMT Legacy Survey of Dust and Gas for Galaxy Evolution Studies: I. Survey Overview and First Results</i> , submitted for publication in MNRAS
	Casasola V., et al., 2017, <i>Radial Distribution of dust, stars, gas, and star-formation rate in Dust-Pedia face-on galaxies</i> , A&A 605 A18 33 <a href="#">ADS Link</a>
	Rho J., et al., 2017, <i>A Dust Twin of Cas A: Cool Dust and Pre-Solar Grains of Silica Revealed in the Supernova Remnant G54.1+0.3</i> , submitted for publication in MNRAS <a href="#">ADS Link</a>
	de Vis P., et al., 2017, <i>Using dust, gas and stellar mass selected samples to probe dust sources and sinks in low metallicity galaxies</i> , MNRAS 471 1743 <a href="#">ADS Link</a>
	Davies J. I., et al., 2016, <i>DustPedia - A Definitive Study of Cosmic Dust in the Local Universe</i> , PASP 129 044102 <a href="#">ADS Link</a>
	Bianchi S., et al., 2016, <i>The Herschel Virgo Cluster Survey. XX. Dust and Gas in the Foreground Galactic Cirrus</i> , A&A 597 A130 25 <a href="#">ADS Link</a>
	de Vis P., et al., 2016, <i>Herschel-ATLAS: Revealing Dust Build-Up and Decline Across Gas-, Dust- and Stellar-Mass Selected Samples: I. Scaling Relations</i> , MNRAS 464 4680 <a href="#">ADS Link</a>
	Eales A., et al., 2015, <i>H-ATLAS/GAMA: Quantifying the Morphological Evolution of the Galaxy Population using Cosmic Calorimetry</i> , MNRAS 452 3489 <a href="#">ADS Link</a>
	Rowlands K., et al., 2014, <i>Herschel-ATLAS: Properties of Dusty Massive Galaxies at Low and High Redshifts</i> , MNRAS 441 1017 <a href="#">ADS Link</a>

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.  $z \leq 0.06$  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](#) |