

# CHRISTOPHER CLARK

## CURRICULUM VITÆ

### CONTACT INFORMATION

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ADDRESS: 23 Arabella Street, Cardiff, CF24 4SW, United Kingdom  
TELEPHONE: (+44)7922 021691  
EMAIL: [cjrc88@gmail.com](mailto:cjrc88@gmail.com)

### 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 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.  
REFERENCE: 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](#) |  
REFERENCE: 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  
Recieved 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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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
2012	<b>€550</b>   EUROPEAN SPACE AGENCY Competitive ESA Conference Sponsorship
2007	<b>£4000</b>   INSTITUTE OF PHYSICS IoP Undergraduate Bursary

## SUCCESSFUL TELESCOPE PROPOSALS

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IRAM NIKA2	A pilot study for nearby galaxy observations with NIKA2, mapping continuum emission of IC 342 at 1.2 & 2 mm   <b>PRINCIPAL INVESTIGATOR</b>
JCMT SCUBA2/RxA	JINGLE (JcMT dust & gas In Nearby Galaxies Legacy Exploration) statistical 850 $\mu\text{m}$ & $^{12}\text{CO}(2-1)$ local-Universe survey of gas and dust   <b>EXECUTIVE TEAM OF LARGE PROGRAM</b>
IRAM NIKA2	IMEGIN (Interpreting Millimetre Emission of Galaxies with Iram & NIKa2) 1.2 & 2 mm survey of nearby galaxies with new instrument   <b>EXECUTIVE TEAM OF LARGE PROGRAM</b>
ALMA	CO and dust continuum observations of nearby galaxies to uncover 'the secret lives of BADGRS'   CO-AUTHOR
JCMT HARP-B	MALATANG (MApping the dense moLecular gAs in the sTrongest stAr-formiNg Galaxies) large program mapping HCN & HCO <sup>+</sup> in nearby galaxies with FTS   CO-AUTHOR
GMRT	H <sub>I</sub> mapping of dust-rich local galaxies   SECOND AUTHOR
JCMT SCUBA2	850 $\mu\text{m}$ photometry of local galaxies containing very cold dust   SECOND AUTHOR
VLA	H <sub>I</sub> mapping of passive late-type 'zombie' galaxies   CO-AUTHOR
IRAM EMIR	$^{12}\text{CO}(1-0)$ spectroscopy of local galaxies with low dust-to-gas ratios   CO-AUTHOR
VLA	H <sub>I</sub> mapping of immature gas-dominated nearby galaxies   CO-AUTHOR

## OBSERVING EXPERIENCE

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MILLIMETRE PHOTOMETRY	NIKA2   5 Nights at Telescope (2017) 1 & 2 mm continuum observations of nearby galaxy M 99 for NIKA2 commissioning.
MILLIMETRE SPECTROSCOPY	RxA, JAMES CLARK MAXWELL TELESCOPE   5 Nights at Telescope (2016) $^{12}\text{CO}(2-1)$ spectroscopy of low-redshift galaxies for the JINGLE large program.
SUBMILLIMETRE PHOTOMETRY	SCUBA2, JAMES CLARK MAXWELL TELESCOPE   8 Nights at Telescope (2014) 850 $\mu\text{m}$ photometry of local galaxies containing very cold dust.
MILLIMETRE SPECTROSCOPY	MOPRA 22M ANTENNA   7 Nights at Telescope (2012) $^{12}\text{CO}(1-0)$ spectroscopy of <i>Herschel</i> -detected galaxies in the Fornax Cluster.

## 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 run 1 <sup>st</sup> -year undergraduate Python lab.
IDL	<b>Seconday language</b>   Well-versed in general numerical and astronomical applications.
R	<b>Seconday language</b>   Adept in specialist data-analysis and statistical use.
L <sup>A</sup> T <sub>E</sub> X	Competent in the creation of high-quality scientific and academic documents.
FORTRAN90	Undergraduate-level ability in basic use.
GIT	Version control for all code development, made freely available on GitHub. <a href="#">GitHub Link</a>

## ACADEMIC PRESENTATIONS

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- 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

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| 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 1 <sup>st</sup> 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	<p>Clark C. J. R., et al., 2017, <i>DustPedia: Multiwavelength Photometry and Imagery of 876 Nearby Galaxies in 42 Ultraviolet–Microwave Bands</i>, accepted by A&amp;A</p> <p>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="#">arXiv 1603.04860</a>  </p> <p>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="#">arXiv 1502.03843</a>  </p> <p>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>  </p>
CO-AUTHOR	<p>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 to MNRAS</p> <p>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>, accepted for publication in MNRAS <a href="#">arXiv 1610.01038</a>  </p> <p>Davies J. I., et al., 2016, <i>DustPedia - A Definitive Study of Cosmic Dust in the Local Universe</i>, PASP 129 044102 <a href="#">arXiv 1609.06138</a>  </p> <p>Bianchi S., et al., 2016, <i>The Herschel Virgo Cluster Survey. XX. Dust and Gas in the Foreground Galactic Cirrus</i>, A&amp;A 597 A130 25 <a href="#">arXiv 1609.05941</a>  </p> <p>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="#">arXiv 1610.01038</a>  </p> <p>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="#">arXiv 1506.05466</a>  </p> <p>Rowlands K., et al., 2014, <i>Herschel-ATLAS: Properties of Dusty Massive Galaxies at Low and High Redshifts</i>, MNRAS 441 1017 <a href="#">arXiv 1403.2994</a>  </p> <p>Peason E. A., et al., 2013, <i>Herschel-ATLAS: estimating redshifts of Herschel sources from sub-mm fluxes</i>, MNRAS 435 2753 <a href="#">arXiv 1308.5681</a>  </p> <p>Bourne N., et al., 2013, <i>Herschel-ATLAS: correlations between dust and gas in local submm-selected galaxies</i>, MNRAS 436 479 <a href="#">arXiv 1308.4406</a>  </p> <p>Agius N. K., et al., 2013, <i>GAMA/H-ATLAS: linking the properties of submm detected and undetected early-type galaxies: I. <math>z \leq 0.06</math> sample</i>, MNRAS 431 1929 <a href="#">arXiv 1302.4276</a>  </p> <p>López-Caniego M., et al., 2013, <i>Mining the Herschel-ATLAS: submillimetre-selected blazars in equatorial fields</i>, MNRAS 430 1566 <a href="#">arXiv 1205.1929</a>  </p> <p>Gomez H. L., et al., 2012, <i>A Cool Dust Factory in the Crab Nebula: A Herschel Study of the Filaments</i>, ApJ 760 96 <a href="#">arXiv 1209.5677</a>  </p> <p>Gomez H. L. &amp; Clark C. J. R., et al., 2012, <i>Dust in Historical Galactic Type-Ia Supernova Remnants with Herschel</i>, MNRAS 420 3557 <a href="#">arXiv 1111.6627</a>  </p>