

---

---

# LEE JAMES SUMMERS, BSc(HONS) MSc(R) FRAS

---

---

Email : [lsummers@astro.ex.ac.uk](mailto:lsummers@astro.ex.ac.uk)

Web : [www.astro.ex.ac.uk/people/lsummers](http://www.astro.ex.ac.uk/people/lsummers)

---

---

## CURRENT POSITION:

**STFC funded Postgraduate researcher** with the Astrophysics group at the University of Exeter

My research interests are the modelling the dynamics of, and mapping the composition of, spiral structure in the Milky Way and how this structure, and the potential for star formation, compares to other galaxies in the local Universe.

---

---

## DEGREE EDUCATION:

DOCTOR OF PHILOSOPHY IN PHYSICS, **PhD**  
*Astrophysics*

University of Exeter, UK  
**October 2008 → February 2012**

**Thesis Title :** *The Mapping and Modelling of Spiral Structure in the Milky Way : The Potential of the Interstellar Medium.*

**Research:** As part of my PhD I developed a new model (via simulation & observation) to describe the dynamics of material within Galactic spiral arms (Perseus, Outer and outer Sct-Cen). Using the models, I created a routine to transform the spiral arm maps to be at a common linear resolution - creating an view of the Milky Way's spiral structure analogous to extra-galactic observations.

---

---

MASTER OF SCIENCE, BY RESEARCH, **MSc(R)**  
*Physics and Astrophysics*

University of Bristol, UK  
**September 2007 → October 2008**

**Thesis Title :** *The Near Infra-Red Luminosity Function and the Importance of Selection Effects in Galaxy Catalogues.*

**Research:** The research project was to use Galaxy Groups from the 2PIGG (a derivative of the 2dFGRS catalogue) and to observe the difference between the optical (2dFGRS) and infra-red (UKIDSS, 2MASS) luminosity functions and the effect, if any, the selection of the component Galaxies had on the derived Luminosity Function.

---

---

BACHELOR OF SCIENCE, **BSc(Hons)**                      Second Class, First Division, (2:1)

University of Bristol, UK  
**October 2004 → July 2007**

**Degree Title :** Physics with Astronomy

**Final year Project Title :** *Galaxy Population and Evolution in the Pisces-Cetus Supercluster*

**Undergraduate Modules:** *First Year:* Practical Physics lab, Practical Astronomy lab, Mechanics, Thermodynamics & Condensed matter Physics, Introduction to Astronomy, Astronomical & Observational Techniques, Pure Mathematics, Mathematics for Physicists I, Cosmology, Electromagnetism, Waves & Fields.

*Second Year:* Practical Physics lab II, Quantum Physics, Particle & Nuclear physics, Quantum Mechanics, Mathematics for Physicists II, Mechanics & Thermodynamics II, Cosmology Galaxies II, High Energy Astrophysics I, EM & Fields II, Computing & Programming in Physics & Scientific Application.

*Final Year:* Galaxies, Stellar Structure & Evolution, Natural & Ecological Physics, Quantum Physics & Mechanics III, Mathematics for Physicists III, High Energy Astrophysics II, Skills for Science & Research.

---

---

## COLLABORATIONS:

- Member of the Exeter-FCRAO CO Survey of the Northern Galactic Plane
  - Member of the Planck 3D-Galaxy Project
  - Member of the JCMT Legacy Survey
- 
- 

## PROFESSIONAL AFFILIATIONS & QUALIFICATIONS:

- Fellow of the *Royal Astronomical Society*, elected 2008.
- 
- 

## PROFESSIONAL TRAINING:

- CONSTELLATION Training School: (sub-) millimeter Observing Techniques in the Herschel Era. CEA Saclay, France. May 19-21, 2010
- 
-

## 2012

**The Spiral Structure of the Outer Milky Way in Position, Velocity and Composition I : The Perseus Spiral Arm** Summers L. J. & Brunt C. M., (*Submitted, MNRAS*)

(A version of the submitted paper can be found at: <http://www.astro.ex.ac.uk/people/lsummers/files/perseus.pdf>)

**The Spiral Structure of the Outer Milky Way in Position, Velocity and Composition II : The Outer & outer Sct-Cen Spiral Arms** Summers L. J. & Brunt C. M., *in prep, presubmission*

(A version of the paper can be found at: <http://www.astro.ex.ac.uk/people/lsummers/files/outer.pdf>)

**The Spiral Structure of the Outer Milky Way in Position, Velocity and Composition III : The Gaseous Composition of the Outer Galaxy** Summers L. J. & Brunt C. M., *in prep*

**The Distribution of Atomic and Molecular Gas Column Densities in Galactic Model Simulations**, Douglas K. A., Acreman D. M., Dobbs C. L., Brunt C. M. & Summers L. J. *in prep*

**The Exeter-FCRAO CO Survey of the Northern Galactic Plane**, Brunt C. M., Heyer, M., Mottram, J., Douglas, K., & Summers L. J. *in prep*

## 2010

**The Molecular Perseus Arm : The Spatial and Velocity Structure of the Perseus Spiral Arm**; Summers, L. J.; Brunt, C.M, *in proceedings: From Stars To Galaxies*, University of Florida, USA, April 2010

## 2008

**The Near Infra-Red Luminosity Function and Selection Effects In Galaxy Catalogues**; Summers L. J., *Masters Thesis*, University of Bristol, UK, September 2008

## INVITED TALKS, SEMINARS &amp; REVIEWS

## 2010

**The Composition & Structure of the Outer Galaxy** Summers, L. J., *Invited Seminar*, University of Bristol, UK, November 2010

## CONTRIBUTIONS AT CONFERENCES

## 2011

**Mapping & Modelling the Milky Way**; Summers, L. J.; Brunt, C.M, Contributing Talk, *MW2011 : The Milky Way in the Herschel Era*, Rome, Italy, October 2011

**Mapping The Outer Galaxy in CO and HI**; Summers, L. J.; Brunt, C.M, Poster, *Royal Astronomical Society : National Astronomy Meeting 2011*, Llandudno, Wales, April 2011

**The Exeter-FCRAO Carbon Monoxide Survey of the Northern Galactic Plane**; Summers, L. J.; Brunt, C.M; Mottram, J.C; Heyer, M, Poster, *Royal Astronomical Society : National Astronomy Meeting 2011*, Llandudno, Wales, April 2011

## 2010

**The Spiral Structure of the Outer Milky Way**; Summers, L. J.; Brunt, C.M, Poster, *The Origin of Stellar Masses*, Constellation Meeting, Tenerife, October 2010

**A Spatial and Velocity Model of the Structure of the Perseus Spiral Arm**; Summers, L. J.; Brunt, C.M, Contributing Talk, *Molecules in Galaxies*, University of Oxford, UK, July 2010

**The Molecular Perseus Arm : The Spatial and Velocity Structure of the Perseus Spiral Arm**; Summers, L. J.; Brunt, C.M, Poster, *in proceedings: From Stars To Galaxies*, University of Florida, USA, April 2010

## 2009

**Galactic Molecular Clouds : Their Place in the Galaxy**; Summers, L. J.; Brunt, C.M, Poster, *Joint European and National Astronomy Meeting 2009 (JENAM)*, University of Hertfordshire, UK, April 2009