

THE UNIVERSITY OF MANCHESTER

PARTICULARS OF APPOINTMENT

**FACULTY OF SCIENCE & ENGINEERING
SCHOOL OF PHYSICS AND ASTRONOMY
ASTROPHYSICS**

**RESEARCH ASSOCIATE –
COSMOLOGY FROM THE DARK ENERGY SURVEY**

VACANCY REF: S&E-09319

Salary:	Grade 6 £31,076 to £38,183 per annum (pro rata if part time)
Hours:	Full time or part time hours negotiable
Duration:	Fixed term (Available 01/04/2017 to 31/03/2020)
Location:	Oxford Road, Manchester
Responsible to:	Professor Sarah Bridle, Professor of Astrophysics

Enquiries about the vacancy, shortlisting and interviews:

Professor Sarah Bridle, Professor of Astrophysics

Email: sarah.bridle@manchester.ac.uk

Working for the University of Manchester

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BACKGROUND

The University of Manchester has one of the largest astrophysics groups in the UK and plays a leading role in the next generation of big telescopes and astronomical sky surveys including the Square Kilometre Array (SKA), the Dark Energy Survey (DES) and the Large Synoptic Survey Telescope (LSST). Of most relevance to this position, Prof Sarah Bridle has led the Weak Lensing Working Groups of DES for the past 10 years, focussing on quantifying dark matter and dark energy in the Universe using high precision measurements of the images of distant galaxies. The Dark Energy Survey is now in the 4th year of its 5 year program of data-taking, having collected information for measuring shapes and photometric redshifts to over 100 million galaxies to-date.

JOB DESCRIPTION

Overall Purpose of the Job

This post is funded by an ERC Consolidator Grant and is focused on the scientific exploitation of the Dark Energy Survey data.

The purpose of the work is to work within the Dark Energy Survey collaboration to constrain cosmological models using this cutting edge dataset.

This will involve a significant emphasis on developing and testing tools for weak gravitational lensing and its connection with other cosmological probes.

Key Responsibilities, Accountabilities or Duties

The range of duties will include:

- Original research and the development of new techniques for understanding the dark matter and dark energy content of the Universe through a variety of cosmological probes.
- Original research on data analysis and scientific interpretation using weak lensing data.
- Collaboration with PhD students involved in the projects, and the rest of the Dark Energy Survey Collaboration.
- Regular presentation of work and results at international conferences and events.
- Report on results of research in peer-reviewed journals, in particular writing of 1st author papers.
- Contribute to teaching duties.
- Develop, extend and support scientific software.
- Use initiative and creativity to identify areas for improvement in the tools being developed.
- Deal with routine communication using a range of media.
- Communicate complex information, orally, in writing and electronically.
- Communicate material of a specialist or highly technical nature.

- Work with colleagues on joint projects, as required.
- Use creativity to analyse and interpret results and draw conclusions on the outcomes.
- Contribute to collaborative decision making with colleagues in areas of research.
- Plan and manage own activity in collaboration with others.
- Be aware of the risks in the work environment and their potential impact on their own work and that of others.

PERSON SPECIFICATION

Essential

- A PhD or equivalent in Physics or Astrophysics, with an emphasis on cosmology and/or the analysis of large data sets.
- A strong publication record, including 1st author papers, commensurate with experience.
- Excellent analytic skills.
- Excellent programming skills.
- Excellent communication skills, including written and presentation skills.
- Willingness to travel within UK and overseas in order to facilitate the research.
- A keen interest in the physics of the early Universe and/or the nature of dark matter and dark energy.
- Ability to work independently and with a distributed team of scientists.
- Ability to liaise effectively with a range of individuals.

Desirable

- Experience of CMB, weak lensing, or galaxy surveys analysis.
- Experience of supervising PhD students.
- Specialist knowledge in collaborative software development.
- Specialist knowledge in scientific programming.