

ICRAR & ICRAR-Pawsey Summer Studentships 2016 - 2017 Project Proposal

| Project Details | |
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| Project Title | An exploration of the diffuse emission from the milky way |
| Primary Supervisor | Dr Paul Hancock |
| Contact Details | Paul.Hancock@Curtin.edu.au |
| Additional Supervisors & Contact Details | Dr Natasha Hurley-Walker Natasha.Hurley-Walker@Curtin.edu.au |
| Additional Resources Required | |
| Student Location for project | Curtin |
| Project Description | <p>GLEAM, the GaLactic and Extragalactic All-sky MWA survey, is a survey of the entire southern radio sky at frequencies between 72 and 231 MHz, made with the Murchison Widefield Array (MWA). Our view of the radio sky is dominated by two main components: a compact set of point like sources corresponding to distant radio galaxies, and a large scale diffuse component that is due to our own Milky Way, but also contains contributions from the large and small Magellanic clouds, and nearby monster galaxies such as Centaurus A.</p> <p>So far studies the diffuse emission from the GLEAM images have been focused on emission in the Galactic plane. These studies are looking for supernova remnants, hot star forming regions, and the Galactic Center. In this project you will be using the GLEAM survey images to investigate the presence and nature of the diffuse emission away from the Galactic plane. This high latitude emission could trace gas that is being driven from, or accreting onto our Galaxy, both of which are processes that are observed in other galaxies, but difficult to study in our own. There have been questions raised about the reality of some of the diffuse structures that are visible within the GLEAM images and this project will explore different techniques that can be used to test these claims.</p> <p>The skills that you will develop during this project include: working within and leading a collaboration, development of reproducible workflows, communication of science to a range of audiences, and of course problem solving and research capability.</p> |

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| Student Attributes | |
| Academic Background | A physics or computing background with an interest in astronomy, particularly radio astronomy. |
| Computing Skills | Familiarity with a programming language, preferably python but any will suffice. |
| Training Requirement | Any required training will be provided |
| Project Timeline | |
| Week 1 | Acquire data, familiarisation with software |
| Week 2 | Background reading and identification of reference surveys |
| Week 3 | First look at the diffuse emission, and broad comparison/identification with other surveys |
| Week 4-7 | Development of analysis technique to test for the presence of emission |
| Week 8 | Identification of real emission features, and possible origins. |
| Week 9 | Final reporting of results |
| Week 10 | Archiving of data, software, and methodology |
| | Final Presentation |