ICRAR & ICRAR-Pawsey Summer Studentships 2018-2019
Project Proposal

Project Details	
Project Title	**Galaxy morphologies from Radio Galaxy Zoo & Galaxy Zoo**
Primary Supervisor	**Important**: This person should be present at the beginning of the studentship period and as much as possible throughout.
Primary Supervisor Availability	**List all dates you will be in Perth and available to your student here. The standard studentship period is to be confirmed (usually November to February), with Christmas break from Dec 24 2018 to Jan 6 2019.** **--I may take an extra 2 weeks of leave around the Xmas period** **--Also I will be on leave from the 4-6 Feb 2019**
Contact Details	Phone/Email 0402828363/ivy.wong@uwa.edu.au
Additional Supervisors & Contact Details	Prof Gerhardt Meurer
Additional Resources Required	Other than a desktop computer, e.g. you might require the student to have suitable safety gear for use in a lab/on the MRO site.
Pawsey Centre Hardware Use	Detail all use of Pawsey Centre hardware/resources here (if any)
Software Required	List all software requirements here. Student Desktop Requirements: • IDL or Python and TopCAT Pawsey Centre software installations required: •
Student Location for project	ICRAR-UWA
Project Description	(150-200 words) The co-evolution of central supermassive black holes (SMBH) and their host galaxies is now well-established both in theory and observations. On the other hand, observational evidence for the enhancement or suppression of star formation due to accreting central supermassive black holes (also known as Active Galactic Nuclei, AGN) is still an open question even though current theoretical simulations suggest that star formation within a galaxy is suppressed and regulated via a ``radio maintenance'' mode whereby the hot magnetised plasma, traced by the AGN powered radio emission, is driving the cool gas out of galaxies. The purpose of this project is to correlate the different morphologies of radio AGN emission as identified through Radio Galaxy Zoo (RGZ) project to the morphologies and star formation properties of the host galaxies from the Galaxy Zoo (GZ) project. The student will produce several catalogues of RGZ +GZ cross-identifications for different classes of objects. For the low-redshift radio sources ($z<0.2$), the student will also compare the radio morphologies as a function of optical spectroscopic galaxy properties (such as emission line ratio diagnostics).
Student Attributes	
Academic Background	Any academic experience you'd expect a student to have.

Computing Skills	Some experience with linux or Python would be preferable but not completely necessary
Training Requirement	The student will learn to work with the TOPCAT catalogue/database software. If they do not possess any computing skills to plot their data, I expect that they will learn how to plot their findings using IDL on the ICRAR Epeius machine
Project Timeline	
Week 1	**Pawsey training (or inductions and project introduction)**
Week 2	software install testing and project introduction
Week 3	Work with the Galaxy Zoo and Radio Galaxy Zoo catalogues
Week 4	Finish making the cross-matched host galaxy catalogues: 1) one for sources at low redshift; 2) one for interacting galaxies or galaxies in close pairs
Week 5	Begin analysis of different galaxy demographics such as disks versus spheroids, barred galaxies, galaxy colour, disk shapes etc
Week 6	Continue analysis from previous week
Week 7	Examine emission line ratio diagnostics
Week 8	Examine galaxy environment
Week 9	Write up report and findings
Week 10	**Final Presentation and Reporting**