

# Robert Džudžar

## Educational Background

2016

**PhD Astrophysics**, Swinburne University of Technology, Centre for Astrophysics and Supercomputing, Melbourne, Australia.

Scholarship: Swinburne University Postgraduate Research Awards (SUPRA)

**Thesis:** The evolution of galaxies in the HI-rich group environment

Supervisors: Prof. Virginia Kilborn, Dr. Sarah M. Sweet, Prof. Gerhard Meurer

Expected thesis submission – June 2020.

2014  
2016

**MSc Astrophysics**, AstroMundus International Master Program, Innsbruck – Austria; Padova and Rome – Italy.

Scholarship: ErasmusMundus Scholarship, Category A

**Thesis:** Dwarf galaxy evolution in the massive and dynamically active cluster A3266

Supervisor: Prof. Francine Marleau

2008

2014

**BSc Physics**, University of Novi Sad, Faculty of Science, Department of Physics, Novi Sad, Serbia.

Scientific field: Physics - Astronomy

## Research Proposals

### Observational projects as Principal Investigator (PI)

2017

**Australia Telescope Compact Array**, Awarded 87 hours to map HI content of group galaxies.

2017

**Nobeyama 45-m**, Awarded 45 hours to map  $^{12}\text{CO}$  content of group galaxies..

2017

**Very Large Array**, Allocated 2h of observations.

2018

**ANU 2.3m: Wide-Field Spectrograph (WiFeS)**, Awarded three nights to observe galaxy: HIPASSJ0400-52:S1 - observations failed due to weather.

### Observational projects as Co-Investigator (Co-I)

2019

**Australia Telescope Compact Array**, Awarded 134 hours for project: HI galaxies with little or no star formation, (Brown, Parkash, Dzudzar et al.).

2019

**ALMA**, ~14 hours for: Molecular gas in HI eXtreme galaxies, (Lutz, Brown, Catinella, Cortese, Denes, Dzudzar et al.).

2020

**OmegaCAM**, Submitted proposal: Stars and star formation in HI-rich galaxies, (Lutz, Brown, Catinella, Cortese, Denes, Dzudzar et al.).

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## Programming Project

2019

**Contributed project to National Optical Astronomy Observatory Data Lab**, I developed a python script in jupyter notebook for an **interactive exploration** of multi-wavelength data-sets, published at <https://datalab.noao.edu>; the script is also available on my github.

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## Languages

Rusyn, Serbian	Native; Bilingual Proficiency	
English	Fluent	
Spanish	Basic Fluency	Great Understanding, Good Speaking, Basic Writing
Slavic languages	Basic understanding	

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## Skills

Programming	Python - Intermediary	<b>Frequently used Python libraries:</b> Astropy, Matplotlib, NumPy, Pandas, APLpy, Bokeh, SciPy and Seaborn; <b>Other:</b> ChainConsumer, H5py, mpi4py
Tools	Frequently used: MIRIAD, CASA, SAODS9; $\text{\LaTeX}$ , Python Other: 3DBarolo, Tableau, Github, Iraf, Source Extractor, GALFIT OzSTAR - basic experience with sbatch and modules	
Other Skills	Data Visualization, Organization, Writing, Presenting	

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## Schools, Seminars, Courses

2012

2020

**Online Courses (mostly Coursera), *Finished:*** An introduction to Interactive Programming in Python, Galaxies and Cosmology, Dark Matter in Galaxies: The Last Mystery, Computing for Data Analysis, Introduction to Computer Science and Programming, Introduction to Data Science in Python, Applied Plotting, Charting & Data Representation in Python, Fundamentals of Visualization with Tableau, Essential Design Principles for Tableau. **Ongoing:** Applied Machine Learning in Python.

2017

**Radio Astronomy School**, Australia Telescope Compact Array, Narrabri, Australia.

2017

**CAASTRO**, Coding workshop, Swinburne University, Australia.

2019

**Swinburne**, Code testing workshop, Swinburne University, Australia.

2020

**ADACS**, ADACS astrocomp hack week: gave a flash talk about interactive visualisation, AAO, Sydney, Australia.

## Talks and Posters

2017

**Talk: "HI in Choir HIPASSJ2027-51"**, at the Swinburne workshop "From Field To Clusters: HI as a tracer of galaxy evolution, Melbourne, Australia.

2017

**Talk: "Gas-rich galaxies in the group environment"**, Bolton and Student Symposium at the CSIRO, Sydney, Australia.

2018

**Poster: "From SINGG to Choirs"**, KIAA, Forum on Gas in Galaxies, Beijing, China.

2018

**Poster: "From SINGG to Choirs"**, ASA, Annual Scientific Meeting, Melbourne, Australia.

2019

**Poster: "Choirs: gas-rich galaxy groups"**, Australia-ESO joint conference, Sydney, Australia.

2019

**Poster: "Galaxy ESO156-G029"**, ASA, Annual Scientific Meeting, Brisbane, Australia.

2019

**Talk: 'HI-rich haloes from the Dark Sage semi-analytic model'**, RESOLVE meeting in US, Remote attendance.

## Event Organization

2012

2015

**Supervisory Board**, Member of the Member of the Supervisory Board of Astronomical Society of Novi Sad, Serbia.

2012

2014

**Co-founder of "Novosadska skola astronomije"**, School of Astronomy for general public, co-founder and lecturer, Novi Sad, Serbia.

2018

**LOC**, Member of the Local Organizing Committee at ANITA Student School and Workshop, Melbourne, Australia.

2018

2019

**STAC**, Member of the Swinburne Telescope Allocation Committee for Keck Telescope, Melbourne, Australia.

## Teaching Experience

### Teaching Assistant

2018

2019

**Discovering the Universe**, Laboratory tutor - one semester in 2017. and Tutor in one semester in 2018..

2019

**Electronics and electromagnetism**, Laboratory tutor.

2019

**eScience**, Laboratory tutor: Introduction to data science and R.

### Outreach

2010

2015

**Educator at various Astronomy events:**, Researchers' Night, Festival of Science, lecturer at Planetarium of Astronomical Society, Novi Sad, Serbia.

2018

2020

**AstroTour guide**, Swinburne University.

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## Publications

- [Džudžar et al., 2019a] Džudžar, R., Kilborn, V., Meurer, G., Sweet, S. M., et al. (2019a). The neutral hydrogen properties of galaxies in gas-rich groups. *MNRAS*, 483:5409–5425.
- [Džudžar et al., 2019b] Džudžar, R., Kilborn, V., Murugesan, C., Meurer, G., Sweet, S. M., and Putman, M. (2019b). Group pre-processing versus cluster ram-pressure stripping: the case of ESO156-G029. *MNRAS*, 490(1):L6–L11.
- [Li et al., 2020] Li, J., Obreschkow, D., Lagos, C., Cortese, L., Welker, C., and Džudžar, R. (2020). Angular momentum-related probe of cold gas deficiencies. *MNRAS*, 493(4):5024–5037.
- [Murugesan et al., 2019] Murugesan, C., Kilborn, V., Obreschkow, D., Glazebrook, K., Lutz, K., Džudžar, R., and Dénes, H. (2019). Angular momentum regulates H I gas content and H I central hole size in the discs of spirals. *MNRAS*, 483:2398–2412.

### Submitted paper:

- **Džudžar R. et al.** Environmental processing of galaxies in HI-rich groups