

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. Gerhardt 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}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.).

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.

Languages

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

Skills

Programming	Python - Intermediary	Frequently used Python libraries: Astropy, Matplotlib, NumPy, Pandas, APLpy, Bokeh, SciPy and Seaborn; Other: ChainConsumer, H5py, mpi4py
Tools	Frequently used: MIRIAD, CASA, SAO DS9; \LaTeX , Python Other: 3D Barolo, Tableau, Github, Iraf, Source Extractor, GALFIT OzSTAR - basic experience with sbatch and modules	
Other Skills	Data Visualization, Organization, Writing, Presenting	

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.

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

Publications in preparation:

- **Džudžar R. et al.** Transition region: when central galaxies stop being HI-dominant in the Dark Sage semi-analytic model
- Kilborn V., Meurer G., **Džudžar R. et al.** Galaxy group HIPASSJ1051-17

Contribution to co-authored publications:

- Murugesan et al., 2019: My contribution was ~50 percent (5 nights) of observation with the ATCA and preliminary data quality check/reduction of one galaxy. I was involved in the scientific discussion.
- Li et al., 2020: I was involved in the scientific discussion.
- Kilborn et al., in prep: I provided the reduced HI data and contributed in analysis. I am involved in scientific discussion.