Rohan Dahale

Glorieta de la Astronomía s/n, Granada, 18008, Spain
E-mail: rdahale@iaa.es ⋄ rd17ms194@iiserkol.ac.in
Personal Website: https://rohandahale.github.io

EDUCATION

Department of Physical Sciences — **Class Rank: 2 out of 60**
5 year BS-MS Dual Degree Programme — **CGPA : 9.52 out of 10**
Indian Institute of Science Education and Research Kolkata — Aug 2017 - May 2022

Relevant Coursework: Fluid and Magneto-hydrodynamics (MHD), Independent Study: Computational MHD, General Theory of Relativity, Stellar Astrophysics, Data Analysis in Astronomy

RESEARCH INTERESTS

mm-VLBI, Jet launching, RML Imaging Methods, Dynamical Imaging

PUBLICATIONS

The Filamentary Internal Structure of the 3C 279 Blazar Jet
Submitted to Nature, 14 March 2022, Pre-print
Fuentes A. et al. including **R. Dahale**

Unraveling the Innermost Jet Structure of OJ 287 with the First GMVA + ALMA Observations
The Astrophysical Journal, Accepted, 27 Apr 2022, arXiv:2205.00554
G.-Y. Zhao et al. including **R. Dahale**

Unravelling the origin of extended radio emission in narrow-line Seyfert 1 galaxies with JVLA
Astronomy & Astrophysics, 658, A12, 25 Jan 2022, DOI: 10.1051/0004-6361/202141698
E. Järvelä, **R. Dahale**, L. Crepaldi, M. Berton, E Congiu, R. Antonucci.

ACCEPTED OBSERVING PROPOSALS

Jansky Very Large Array (JVLA), 15.2 hours, ID 22A-002 — November 2021
Revealing the secret lives of extraordinary NLS1s - large-scale view
PI: E. Järvelä, Co PI: R. Dahale, M. Berton, A. Lahteenmaki, L. Crepaldi, A. Vietri, S. Tripathi

RESEARCH EXPERIENCE

Magnetic Fields in Relativistic Jets of Supermassive Black Holes
Master Thesis supervised by Dr. José L. Gómez
Funded by JAE Intro 2021 Scholarship — Jun 2021 - May 2022
Instituto de Astrofísica de Andalucía (CSIC), Granada, Spain

- Faraday rotation analysis of **multi-frequency VLBA polarimetric** observations to determine the magnetic field structure in the jet of the AGN and hence understand the jet formation and stability.
- The initial phase and amplitude calibration are performed on the $\mathcal{AIPS}$ using `ParselTongue` following the standard procedure for polarimetric observations. The data is cleaned, self-calibrated, and imaged both in total and polarized intensity with `DIFMAP` and `eht-imaging`.

Extended Radio Emission in Narrow-line Seyfert 1 Galaxies with JVLA
Supervised by Dr. Emilia Järvelä — May 2019 - Jun 2021
University of California, Santa Barbara

- Publication: Astronomy & Astrophysics, 658, A12, 25 Jan 2022, DOI: 10.1051/0004-6361/202141698
- Determined the predominant sources of radio emission in a sample of **44 NLS1** galaxies, selected based on their extended kpc-scale radio morphologies at **5.2 GHz**
- Calibrated the data using the EVLA pipeline and produced radio maps and spectral index maps using the **CASA** `tclean` task to do multi-term (multi-scale) multi-frequency synthesis, `mt-mfs`

QSO PG 1630+377 Lyman Edge Polarisation May 2019 - Jun 2021
University of California, Santa Barbara

- **Collaboration: Prof. Robert Antonucci, Dr. Dean Hines, Prof. Makoto Kishimoto, Anshuman Acharya**
- The polarisation of the quasar measured with the HST/FOS showed a steep rise below the Lyman edge, reaching above $\sim$ **20**%, never seen before in non-blazar active galaxies (**Koratkar A. et al., 1995**).
- Used the HST/FOC observations to determine the polarisation on both sides of the Lyman edge and followed up with the same set of FOS observations to find that the results of Koratkar+1995 are incorrect.

Characterisation of Wineglasses with respect to Young's Modulus as a Function of Temperature using Laser Interferometry Jun - Dec 2019
VISION 2019, Physical Research Laboratory, Ahmedabad, India

- Used a laser interferometry setup to measure the harmonic frequencies of wineglasses and hence calculate the Young's modulus from the verified A. P. French model.

ACADEMIC ACHIEVEMENTS

INSPIRE Scholarship Aug 2017 - Jul 2022
Department of Science and Technology (DST), India

- Offered to **top 1**% students in 12th grade exams, undertaking Bachelor and Masters level education in the Natural Sciences. The scholarship amounts to **400,000 INR** ($\sim$ **4500 EUR**) **for 5 years**.

Extension to the JAE Intro 2021 Scholarship Mar - Jun 2022
Consejo Superior De Investigaciones Científicas (CSIC), Spain

- Extension of 4 months with **2400 EUR** is awarded to **top 100** beneficiaries of the JAE Intro Scholarship

JAE Intro 2021 Scholarship Oct 2021 - Feb 2022
Consejo Superior De Investigaciones Científicas (CSIC), Spain

- **250** Scholarships are offered to undergraduate students interested in doing a research on a topic of their interest and help them decide if they want to do a doctoral thesis on it.
- This grant is used for the Master Thesis supervised by **Dr. José L. Gómez** at the **Instituto de Astrofísica de Andalucía (IAA-CSIC)**. The scholarship amounts to **3000 EUR** for five months.

VIkram Sarabhai Innovation competitiON (VISION) 2019 Jun - Dec 2019
Physical Research Laboratory, Ahmedabad, India

- Received grant of **300,000 INR** ($\sim$ **3500 EUR**) and got selected among the **Top 6** teams **in India.**

Radio Astronomy Winter School (RAWSC) 2018 Dec 2018
National Centre for Radio Astrophysics(NCRA), Pune, India
Inter University Centre for Astronomy and Astrophysics (IUCAA), Pune, India

- Among the **Top 30** students selected **in India.**

Vijyoshi National Science Camp 2017 Dec 2017
Department of Science and Technology (DST), India - INSPIRE

TEACHING ASSISTANTSHIPS

Spring 2021: PH1201: Electricity and Magnetism Apr - Jul 2021
Level: First Year BS-MS, IISER Kolkata

Autumn 2020: PH1101: Mechanics I Dec 2020 - Mar 2021
Level: First Year BS-MS, IISER Kolkata

Autumn 2020: PH3103: Mathematical Methods for Physics Aug - Dec 2020
Level: Third Year BS-MS, IISER Kolkata

SKILLS

Astronomy	$\mathcal{AIPS}$, `ParselTongue`, `DIFMAP`, `eht-imaging`, CASA, AstroPy
Programming	Python: Matplotlib, NumPy, SciPy, Pandas; Jupyter Notebook, C++
Softwares	MATLAB, LaTeX, Inkscape, ImageJ
Languages	Fluent in English, Hindi, Marathi (Native), Beginner in Spanish

ATTENDED CONFERENCES & WORKSHOPS

ngEHT June 2022 Meeting 22 - 25 Jun 2021
Assembling the ngEHT: Community-Driven Science to a Global Instrument

18th Synthesis Imaging Workshop 28 - 25 May 2022
National Radio Astronomy Observatory (NRAO), USA

PySnacks: Astronomical Data Science with Python 22 Mar - 1 Apr 2022
Instituto de Astrofísica de Andalucía - Severo Ochoa Training Initiative

Looking at the polarized Universe: past, present, and future 24 - 28 May 2021
The RoboPol Collaboration

ngEHT November 2021 Meeting 1 - 5 Nov 2021
From Vision to Instrument: Designing the Next-Generation EHT to Transform Black Hole Science

EXTRACURRICULARS

Class Representative, Department of Physical Sciences Aug 2019 - Dec 2020
Indian Institute of Science Education and Research Kolkata

Convener of Science Club Aug 2018 - May 2019
Indian Institute of Science Education and Research Kolkata

REFERENCES

Dr. José L. Gómez
Research Scientist, Instituto de Astrofísica de Andalucía (IAA - CSIC), Granada, Spain
jlgomez@iaa.es

Dr. Emilia Järvelä
Research Fellow at European Space Agency, European Space Astronomy Centre, Spain
ejarvela@sciops.esa.int

Prof. Robert Antonucci
Professor at Department of Physics, University of California, Santa Barbara
antonucci@physics.ucsb.edu