

Rohan Dahale

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Glorieta de la Astronomía s/n, Granada, 18008, Spain

EDUCATION

Bachelor of Science and Master of Science in Physical Sciences	Degrees Conferred: 14 July 2022
Indian Institute of Science Education and Research Kolkata	1 Aug 2017 - 14 Jul 2022
5 year BS-MS Dual Degree Programme	CGPA: 9.52 out of 10

RESEARCH INTERESTS

Imaging supermassive black holes and relativistic jets with mm-VLBI observations (EHT, GMVA, *RadioAstron*), Jet Launching, Bayesian Imaging and Modeling, Dynamical Imaging

PUBLICATIONS

The Filamentary Internal Structure of the 3C 279 Blazar Jet

Submitted to Nature, 14 March 2022, [Pre-print](#)

A. Fuentes et al. including **R. Dahale**

Unraveling the Innermost Jet Structure of OJ 287 with the First GMVA + ALMA Observations

The Astrophysical Journal, 932, 72, 16 June 2022, [DOI:10.3847/1538-4357/ac6b9c](#)

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 January 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

Nov 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 *AIPS* using **ParseITongue** 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 January 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

La Caixa Doctoral INPhINIT Fellowship

1 Sep 2022 - 31 Aug 2025

Fundación "la Caixa" - Instituto de Astrofísica de Andalucía (IAA-CSIC)

- **35 fellowships** (1000s of applications) are awarded to pursue PhD studies in research centres accredited with the Spanish Seal of **Excellence Severo Ochoa** in STEM disciplines (life sciences and health, experimental sciences, physics, chemistry and mathematics).
- Duration: **3 years** and Total maximum grant: **€122,592**.

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 **€4,500**) 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 **2,400 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 **€3,000** for five months.

Vikram Sarabhai Innovation competiTiON (VISION) 2019

Jun - Dec 2019

Physical Research Laboratory, Ahmedabad, India

- Received grant of **300,000 INR** (\sim **€3,500**) 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	<i>AIPS, ParselTongue, DIFMAP, eht-imaging, CASA, AstroPy</i>
Programming	<i>Julia; Python: Matplotlib, NumPy, SciPy, Pandas; C++</i>
Softwares	<i>MATLAB, L^AT_EX, Inkscape, ImageJ</i>
Languages	<i>Fluent in English, Hindi, Marathi (Native), Beginner in Spanish</i>

ATTENDED CONFERENCES & WORKSHOPS

European Astronomical Society Annual Meeting (EAS 2022: Valencia) 27 Jun - 1 Jul 2022
European Astronomical Society

Assembling the ngEHT: Community-Driven Science to a Global Instrument 22 - 25 Jun 2022
Next Generation Event Horizon Telescope Collaboration

EHT 2022 Summer Collaboration Meeting 19 - 22 Jun 2022
Event Horizon Telescope Collaboration

PySnacks: Matplotlib for Beginners: 15 Jun 2022
Instituto de Astrofísica de Andalucía - Severo Ochoa Training Initiative

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

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

OTHER POSITIONS OF RESPONSIBILITY

Local Organizing Committee Member 22 - 25 Jun 2022
ngEHT June 2022 Meeting

Local Organizing Committee Member 19 - 22 Jun 2022
EHT 2022 Summer Collaboration Meeting

Class Representative, Department of Physical Sciences
Indian Institute of Science Education and Research Kolkata

Aug 2019 - Dec 2020

Convener of Science Club
Indian Institute of Science Education and Research Kolkata

Aug 2018 - May 2019

REFERENCES

Dr. José L. Gómez

Research Scientist, Instituto de Astrofísica de Andalucía (IAA - CSIC), Granada, Spain

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