

# Roland Timmerman

POSTDOCTORAL RESEARCH ASSOCIATE AT DURHAM UNIVERSITY

## Personal data

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**Place and Date of Birth** The Netherlands | 1996  
**Nationality** Dutch  
**Website** [www.rolandtimmerman.com](http://www.rolandtimmerman.com)  
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## Experience

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1 December 2023 - Present **Postdoctoral research associate** *Durham University*  
1 September 2019 - 30 November 2023 **PhD candidate** *Leiden Observatory*

## Education

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**PhD Astronomy** *University of Leiden*  
LEIDEN, THE NETHERLANDS *2019 - 2023*

- Thesis title: Tuning in to the Feedback Bassline
- PhD award date: 22 November 2023

**MSc Astronomy (cum laude)** *University of Groningen*  
GRONINGEN, THE NETHERLANDS *2017 - 2019*

- Major: Theoretical and Observational Astronomy
- Major: Data Science

**BSc Astronomy** *University of Groningen*  
GRONINGEN, THE NETHERLANDS *2014 - 2017*

- Major: Theoretical Astronomy

## Research

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### First-author refereed publications

PAPERS IN PREPARATION NOT LISTED

- **R. Timmerman**, R. J. van Weeren, A. Botteon, H. J. A. Röttgering, L. K. Morabito, F. Sweijen, "The first high-redshift cavity power measurements of cool-core galaxy clusters with the International LOFAR Telescope", 2024, *A&A*, 687, A31
- **R. Timmerman**, R. J. van Weeren, A. Botteon, H. J. A. Röttgering, B. R. McNamara, F. Sweijen, L. Birzan, L. K. Morabito, "Measuring cavity powers of active galactic nuclei in clusters using a hybrid X-ray-radio method", 2022, *A&A*, 668, A65
- **R. Timmerman**, R. J. van Weeren, J. R. Callingham, W. D. Cotton, R. Perley, L. K. Morabito, N. A. B. Gizani, A. H. Bridle, C. P. O'Dea, S. A. Baum, G. R. Tremblay, P. Kharb, N. E. Kassim, H. J. A. Röttgering, A. Botteon, F. Sweijen, C. Tasse, M. Brüggen, J. Moldon, T. Shimwell, G. Brunetti, "Origin of the ring structures in Hercules A", 2022, *A&A*, 658, A5
- **R. Timmerman**, R. J. van Weeren, M. McDonald, A. Ignesti, B. R. McNamara, J. Hlavacek-Larrondo, H. J. A. Röttgering, "Very Large Array observations of the mini-halo and AGN feedback in the Phoenix cluster", 2021, *A&A*, 646, A38

### First-author non-refereed publications

PAPERS IN PREPARATION NOT LISTED

- **R. Timmerman**, M. Arias, A. Botteon, "LOFAR Non-detections of SN 2023ixf in its First Year Post-explosion", 2024, *RNAAS*, 8, 311

## Co-authored refereed publications

SUMMARY: 11 TOTAL CO-AUTHORED PAPERS, 5 OF WHICH AS SECOND OR THIRD AUTHOR.

- L. K. Morabito, N. Jackson, J. de Jong, ..., **R. Timmerman** et al., "A decade of sub-arcsecond imaging with the International LOFAR Telescope", 2025, *Astrophys Space Sci.*, 370, 19
- A. M. van Genderen, L. Lobel, **R. Timmerman** et al., "Investigation of the pulsations, outbursts, and evolution of the yellow hypergiants:  $\rho$  Cas, HR 8752, and HR 5171A, with notes on HD 179821", 2025, *A&A*, 694, A136
- R. J. van Weeren, **R. Timmerman**, V. Vaidya et al., "LOFAR high-band antenna observations of the Perseus cluster: The discovery of a giant radio halo", 2024, *A&A*, 692, A12
- M. S. S. L. Oei, M. J. Hardcastle, **R. Timmerman** et al. "Black hole jets on the scale of the cosmic web", 2024, *Nature*, 633, 537
- E. Ceccotti, A. R. Offringa, L. V. E. Koopmans, **R. Timmerman** et al. "A novel radio imaging method for physical spectral index modelling", 2023, *MNRAS*, 525, 3, 3946
- C. J. Riseley, N. Biava, A. Bonafede, ..., **R. Timmerman** et al., "A 'MeerKAT-meets-LOFAR' study of Abell 1413: a moderately disturbed non-cool-core cluster hosting a  $\sim 500$  kpc 'mini'-halo", 2023, *MNRAS*, 524, 4, 6052
- C. M. Cordun, **R. Timmerman**, G. K. Miley et al., "VLBI imaging of high-redshift galaxies and protoclusters at low radio frequencies with the International LOFAR Telescope", 2023, *A&A*, 676, A29
- J. R. Callingham, T. W. Shimwell, H. K. Vedantham, ..., **R. Timmerman** et al., "V-LoTSS: The circularly polarised LOFAR Two-metre Sky Survey", 2023, *A&A*, 670, A124
- T. W. Shimwell, M. J. Hardcastle, C. Tasse, ..., **R. Timmerman** et al., "The LOFAR Two-metre Sky Survey – V. Second data release", 2022, *A&A*, 659, A1
- I. D. Roberts, R. J. van Weeren, **R. Timmerman** et al., "LoTSS Jellyfish Galaxies III. The first identification of jellyfish galaxies in the Perseus cluster", 2022, *A&A*, 658, A44
- C. J. Riseley, K. Rajpurohit, F. Loi, A. Botteon, **R. Timmerman** et al., "A MeerKAT-meets-LOFAR Study of MS 1455.0+2232: A 590 kiloparsec 'Mini'-Halo in a Slushing Cool-Core Cluster", 2022, *MNRAS*, 512, 3, 4210

## Colloquia & seminars

SPEAKER

- |      |  |                |
|------|--|----------------|
| 2024 | <b>University of Nottingham</b> Centre for Astronomy and Particle Theory | Nottingham, UK |
| 2023 | <b>Durham University</b> Ogden Centre for Extragalactic Astronomy        | Durham, UK     |
| 2023 | <b>University of Manchester</b> Jodrell Bank Centre for Astrophysics     | Manchester, UK |

## Invited talks

SPEAKER

- |      |   |                         |
|------|---|-------------------------|
| 2024 | <b>LOFAR Family Meeting</b>                   | Leiden, The Netherlands |
| 2024 | <b>McNamara@65</b>                            | Waterloo, Canada        |
| 2024 | <b>URSI Atlantic Radio Science Conference</b> | Gran Canaria, Spain     |
| 2024 | <b>SPARCS XII</b>                             | Bologna, Italy          |
| 2023 | <b>Bologna VLBI: Life begins at 40!</b>       | Bologna, Italy          |

## Contributed talks

SPEAKER

- |      |  |                             |
|------|--|-----------------------------|
| 2024 | <b>Science at Low Frequencies X</b>                        | Shanghai, China             |
| 2024 | <b>Galaxy Clusters &amp; Radio Relics II</b>               | Cambridge, United States    |
| 2024 | <b>AGN Across Continents</b>                               | Durham, United Kingdom      |
| 2024 | <b>URSI Atlantic Radio Science Conference</b>              | Gran Canaria, Spain         |
| 2024 | <b>URSI UK Symposium</b>                                   | Teddington, United Kingdom  |
| 2023 | <b>Science at Low Frequencies IX</b>                       | Amsterdam, The Netherlands  |
| 2023 | <b>LOFAR Family Meeting</b>                                | Olsztyn, Poland             |
| 2023 | <b>Nederlandse Astronomen Conferentie</b>                  | Leeuwarden, The Netherlands |
| 2022 | <b>SPARCS XI</b>   | Hammanskraal, South Africa  |
| 2022 | <b>LOFAR ECR Event</b>                                     | Leiden, The Netherlands     |
| 2022 | <b>NOVA NW1 Meeting</b>                                    | Groningen, The Netherlands  |
| 2022 | <b>IAU General Assembly XXXI</b>                           | Busan, South Korea          |
| 2021 | <b>Annual Meeting of the European Astronomical Society</b> | Online                      |
| 2020 | <b>Annual Meeting of the European Astronomical Society</b> | Online                      |

## Telescope time granted

AS PRINCIPAL INVESTIGATOR

- **LOFAR**, DDT, "LOFAR long-baseline observations of Taurus A", Allocated 8 hours
- **LOFAR**, Commissioning, "Detecting fringes between LOFAR and the uGMRT", Allocated 2 hours
- **LOFAR**, Cycle 16, "Expanding the limits: high-redshift LOFAR study of AGN feedback in galaxy clusters", Allocated 33 hours
- **LOFAR**, Cycle 15, "Entering uncharted territory: high-redshift LOFAR study of AGN feedback in galaxy clusters", Allocated 16 hours
- **LOFAR**, Cycle 14, "The first high resolution LOFAR study of AGN feedback in galaxy clusters", Allocated 92 hours

## Telescope time granted

AS CO INVESTIGATOR

- **VLA**, Cycle 24B, "What triggered the quasar outburst in the relaxed, cool core cluster Zw2089?", Allocated 4 hours
- **WEAVE**, Cycle 2024B, "WEAVE LIFU observations of Brightest Cluster Galaxies", Allocated 28 hours
- **VLA**, Cycle 24B, "High-resolution JVL A imaging of the longest black hole jets known", Allocated 24 hours
- **LOFAR**, Commissioning, "LOFAR long-baselines observations of Cas A", Allocated 8 hours
- **LOFAR**, Cycle 20, "Studying a high-redshift radio relic at arcsecond resolutions with the international LOFAR telescope", Allocated 8 hours
- **LOFAR**, Cycle 20, "Deep ILT observations of Coma A (3C277.3)", Allocated 30 hours
- **LOFAR**, DDT, "LOFAR monitoring of supernova 2023ixf in M101", Allocated 35 hours
- **uGMRT**, Cycle 44, "Verifying a 6.2 Mpc-long quasar outflow at half the Universe's age", Allocated 15 hours

## Computing resources granted

AS PRINCIPAL INVESTIGATOR

- **SURF**, "Sub-arcsecond imaging with LOFAR", Allocated 910,000 core hours

## Review service

OBSERVATORIES

- **Murchison Widefield Array** Time Allocation Committee, cycles 2024A-2025B
- **e-MERLIN** external referee, cycle 18
- **Giant Metrewave Radio Telescope** external referee, cycle 47

## Review service

JOURNALS

- **Monthly Notices of the Royal Astronomical Society**
- **Astronomy & Astrophysics**
- **Advances in Space Research**

# Memberships

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## Large societies

- **International Astronomical Union**, Junior Member

## Collaborations

- **LOFAR Surveys Collaboration**  
Cluster Science Working Group & Long Baseline Working Group
- **Square Kilometer Array Observatory**  
VLBI Working Group
- **Habitable Worlds Observatory**  
AGN Working Group

# Press & Outreach

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## Contributions in media

- 2023 **Zenit** Article dedicated to the results from Timmerman et al. (2024)
- 2022 **NOVA** Article presents results from Timmerman et al. (2022b)
- 2022 **BBC News** Article includes results from Timmerman et al. (2022a)
- 2021 **Zenit** Article includes results from Timmerman et al. (2022)
- 2021 **Zenit** Article describes general direction of PhD research

## Public outreach

- Public lecture at the Mexborough & Swinton Astronomical Society
- Gave a lecture at the Pint of Science 2024 festival in Durham
- Guest class for nine-year-old children about the Solar System at primary school "OBS De Voorsprong" in The Hague, 2022
- Co-organizing the public Oort lecture, 2022
- Volunteering at Blaauw Observatory, 2018-2019
- Volunteering at the Dwingeloo Radiotelescope (CAMRAS), 2017-2022

# Supervision & Teaching

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## Supervision

2024	<b>MSc - Abdul Gani</b> Tailed radio galaxies in the merging galaxy cluster MACS J1354.6+7714	Durham University
2024	<b>Summer internship - Sravya Kalachaveedu</b> Spectral index measurements of radio galaxies using the LoTSS catalog	Durham University
2023	<b>BSc - Liam de Vos &amp; Tom van Schaik</b> Searching for carbon radio recombination lines in a distant radio galaxy	University of Leiden
2023	<b>MSc - Rahul Priyadarshan Ravichandran</b> Investigating angular broadening caused by interstellar scattering of radio waves	University of Leiden
2022	<b>LEAPS summer school - Tombo Rarivoarinoro</b> Low-frequency investigation into tailed radio galaxies within galaxy clusters	University of Leiden
2022	<b>MSc - Cristina Cordun</b> Investigating the $\alpha - z$ correlation of high-redshift (proto-)clusters using International LOFAR Telescope observations. The results were published in <i>Astronomy Astrophysics</i> .	University of Leiden

## Teaching

### Foundations of Physics

TEACHING ASSISTANT

- Undergraduate course introducing classical mechanics, optics, electromagnetism, relativity and quantum mechanics.

### 7th LOFAR Data School

INVITED LECTURER

- Week-long postgraduate school for introducing new users to working with LOFAR observations.

### Large Scale Structure and Galaxy Formation

TEACHING ASSISTANT

- MSc course focused the formation and evolution of large scale structure and galaxies in the universe.

### Modern Astronomical Research and Communication

TEACHING ASSISTANT

- BSc course on soft skills (such as presenting and writing) in academia.

### Electrodynamics of Radiation Processes

TEACHING ASSISTANT

- MSc course focused on topics such as blackbody radiation, synchrotron radiation, bremsstrahlung and Compton scattering.

### Programming and Numerical Methods

TEACHING ASSISTANT

- BSc course on the basics of programming in Python,  $\LaTeX$ , as well as the basics of using Linux.

## References

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### Dr. Reinout J. van Weeren

Leiden Observatory, Einsteinweg 55, 2333 CC Leiden, The Netherlands

### Prof. dr. Huub J. A. Röttgering

Leiden Observatory, Einsteinweg 55, 2333 CC Leiden, The Netherlands

### Prof. dr. Leah K. Morabito

Durham University, South Road, Durham DH1 3LE, United Kingdom