

NATANAEL GOMES DE OLIVEIRA ISÍDIO

Ph.D. candidate in Astronomy

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EDUCATION

- 2024 – present **Ph.D. in Astronomy**
European Southern Observatory
• Supervisor: [Dr. Paola Popesso](#)
- 2023 – 2024 **M.Sc. in Astronomy | Highest honours**
Federal University of Rio de Janeiro & National Radio Astronomy Observatory
• Supervisors: [Prof. Dr. Karín Menéndez-Delmestre](#) & [Dr. Pedro Bonetti Beaklini](#)
- 2018 – 2022 **B.Sc. in Astronomy & Astrophysics | First class honours**
Valongo Observatory, Federal University of Rio de Janeiro, Brazil
Summer Internship at the European Southern Observatory, Garching, Germany (2022)
• Thesis: *Modeling the dark matter distribution in Milky Way-analog galaxies*
• Advisors: [Prof. Dr. Karín Menéndez-Delmestre](#) & [Prof. Dr. Thiago Signorini Gonçalves](#)

RESEARCH EXPERIENCE

- 2024 – present **Dissecting the satellite quenching process by process**
Ph.D. project supervised by [Dr. Paola Popesso](#)
- 2019 – present **Dark matter distribution in Milky Way-analog galaxies**
Master's project supervised by [Prof. Dr. Karín Menéndez-Delmestre](#) and [Prof. Dr. Thiago Signorini Gonçalves](#)
- 2022 – 2022 **Wind-blown bubbles around accreting neutron stars and black holes**
Research project supervised by [Dr. Marianne Heida](#) (ESO fellow, Garching) and [Dr. María Diaz-Trigo](#) (ESO staff, Garching)
| [My interview about the programme here](#)
- 2022 – present **Physical and chemical properties of globular clusters in dwarf galaxies**
Research project developed by undergraduate student Raimundo Ferreira supervised by [Prof. Dr. Marco Grossi](#). I collaborate on this project.
- 2020 – present **Census of Austral Nearby Galaxies – CANGA survey**
[CANGA survey](#) is going to be the deepest galaxy survey ever carried out in the southern hemisphere, covering the *griz* bands for ~1500 nearby galaxies with the SOAR telescope (ESO, Chile). PI: [Prof. Dr. Karín Menéndez-Delmestre](#)

GRANTS & HONOURS

- 2024 **Motion of applause for an outstanding scientific career in bringing Brazil's name to the world**
Medal of honour presented by the Brazilian government
- 2024 **IMPRS PhD fellowship at ESO (European Southern Observatory), Germany**
- 2024 **Studentship for a sandwich Master's degree at the NRAO Facilities in New Mexico, USA**
Studentship supported by the [National Radio Astronomy Observatory \(NRAO\)](#), [National Science Foundation \(NFS\)](#) and [Serrapilheira Institute](#) for a research exchange at the VLA/NRAO Facilities, in New Mexico, USA.
- 2023 **Nominated for the Best Undergraduate Scientific Research Award in Brazil**
Nominated for the award by the Valongo Observatory of the Federal University of Rio de Janeiro.
- 2023 **Honorable Mention**
Outstanding performance presentation in the 12th Academic Integration Week of the Federal University of Rio de Janeiro for the work "Modeling the dark matter distribution in Milky way-analog galaxies"
- 2023 – 2024 **CAPES MSc Scholarship at the Valongo Observatory, Brazil**
Masters scholarship by Coordination for the Improvement of Higher Education Personnel (CAPES Scholarship: 88887.821755/2023-00), the national funding agency for graduate research

2022 Internship | ESO Summer Research Programme, Germany

European Southern Observatory (ESO) internship to develop a summer research project at the ESO Headquarters in Garching, Germany | €4000

2022 Research Grant

SIGMA XI, THE SCIENTIFIC RESEARCH HONOR SOCIETY (North Carolina, United States of America; Grant: G20211001-465) grant to cover all expenses related to an observational mission with SOAR/ESO, in Chile, and technical improvements | USD 2000

2022 Honorable Mention

Outstanding performance presentation in the 11th Academic Integration Week of the Federal University of Rio de Janeiro for the work "Rotation Curves of Spiral Galaxies in Search for a Milky Way Dark Matter Model"

2019 – 2022 Undergraduate Research Scholarship

Undergraduate research scholarship by Brazilian National Council for Scientific and Technological Development (CNPq Scholarship: 153284/2019-6) Foundation (extended in 2020, 2021 and 2022)

PUBLICATIONS

REFEREED PUBLICATIONS:

2024 Dark matter distribution in Milky Way analog galaxies

de Isídio, N. et al., 2024, ApJ, 971, 69

2024 S-PLUS: Photometric Recalibration with the Stellar Color Regression Method and an Improved Gaia XP Synthetic Photometry Method

Kai Xiao et al. (incl. de Oliveira), 2024, ApJS, 271, 41X

2024 (in prep.) Census of Austral Nearby Galaxies (CANGA) Survey: Data release 1

K. Menéndez-Delmestre, de Oliveira et al., (in prep.)

2024 (in prep.) Stellar mass distribution in local barred galaxies

Y. Cavalcante-Coelho et al. (incl. de Oliveira), (in prep.)

NON-REFEREED PUBLICATIONS:

2022 Rotation Curve decomposition in search for a dark matter model for Milky Way-analog galaxies

de Oliveira, Menéndez-Delmestre & Gonçalves, 2022, VLT-How, 18, 18

2021 Unlocking the Climate Record Stored within Mars' Polar Layered Deposits

Smith, Isaac. et al. (incl. N. Oliveira), 2021, BASS, 53, 378

2021 Solar-System-Wide Significance of Mars Polar Science

Smith, Isaac. et al. (incl. N. Oliveira), 2021, BASS, 53, 301

PROGRAMMING SKILLS

Python (Astropy, Scipy, Matplotlib, Numpy, etc.), IDL (basic), TOPCAT, ^{3D}Barolo, CASA, SAOImageDS9, ESO Pipeline (X-shooter and GRAVITY instruments), Aladin, L^AT_EX, SQL, Markov Chain Monte Carlo, etc.

PRESENTATIONS

ORAL PRESENTATIONS

2024 Lecture: Dark matter distribution in Milky Way-analog galaxies

In-person, National Radio Astronomy Observatory (NRAO), Socorro, USA

2024 Talk: Dark matter distribution in Milky Way-analog galaxies

In-person, Jansky Very Large Array Operations Center (AOC/VLA), Socorro, USA

2024 Talk: Dark matter distribution in Milky Way-analog galaxies

In-person, Leiden Observatory, Leiden, Netherlands

2024 Talk: Dark matter distribution in Milky Way-analog galaxies

In-person, Max Planck for Astrophysics (MPA), Garching bei München, Germany

2024 Talk: Dark matter distribution in Milky Way-analog galaxies

In-person, Max Planck for Radio Astronomy (MPIfR), Bonn, Germany

- 2023 **Talk: Dark matter distribution in Milky Way-analog galaxies**
In-person, XVII Latin American IAU Meeting, Montevideo, Uruguay
- 2023 **Flash talk: Dark matter distribution in Milky Way-analog galaxies**
In-person, Surveying the Milky Way conference, California Institute of Technology (Caltech), USA
- 2023 **Talk: Dark matter distribution in Milky Way-analog galaxies**
In-person, XLVI Annual meeting of the Brazilian Astronomical Society, Rio de Janeiro, Brazil
- 2023 **Lecture: Modeling the dark matter distribution in Milky Way-analog galaxies**
In-person, 1st Rio Dark Matter Meeting, Rio de Janeiro, Brazil
- 2023 **Talk: Modeling the dark matter distribution in Milky Way-analog galaxies**
In-person, Graduate Week of the Valongo Observatory, Rio de Janeiro, Brazil
- 2023 **Talk: Modeling the dark matter distribution in Milky Way-analog galaxies**
In-person, 12nd Academic Integration Week of the Federal University of Rio de Janeiro, Rio de Janeiro, Brazil
- 2022 **Talk: Rotation Curve decomposition in search for a dark matter model for analog galaxies**
In-person, The VLTI High angular resolution Observations Workshop, ESO in Santiago, Chile
- 2022 **Talk: Measuring the angular size of near-IR dust emission in AGNs with GRAVITY**
In-person, The VLTI High angular resolution Observations Workshop, ESO in Santiago, Chile
- 2022 **Talk: Wind-blown bubbles around accreting neutron stars and black holes**
In-person, ESO Summer Research Programme, ESO in Garching, Germany
- 2021 **Talk: Rotation curves of spiral galaxies in search for a Milky Way dark matter model**
Virtual, XLII Giulio Massarani Scientific Initiation Journey, Rio de Janeiro, Brazil

POSTER PRESENTATIONS:

- 2023 **Dark matter distribution in Milky Way-analog galaxies**
In-person, Surveying the Milky Way conference, California Institute of Technology, USA
- 2022 **Rotation Curve decomposition in search for a dark matter model for-analog galaxies**
In-person, The VLTI High angular resolution Observations Workshop, ESO in Santiago, Chile
- 2022 **Rotation Curve decomposition in search for a dark matter model for analog galaxies**
Virtual, XLV Annual Meeting of the Brazilian Astronomical Society
- 2021 **Rotation curves of spiral galaxies in search for a Milky Way dark matter model**
Virtual, XLIV Annual Meeting of the Brazilian Astronomical Society

**OBSERVATIONAL
EXPERIENCE**

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- 2024A **Optical observations with the Perkin-Elmer Telescope, Pico dos Dias Observatory, Brazil**
Looking at the stellar distribution: a focus on Milky Way analogs
2nd Investigator, 2023A, 100 hours
• I led the observational mission, controlling the instruments.
- 2024A **HI observations with the Very Large Array (VLA) – New Mexico, USA**
Building a more realistic dark matter halo for our Milky Way: a focus on nearby Milky Way analogs
2nd Investigator, 2024A, 76 hours
• I prepared the whole proposal, including both scientific and technical justifications and the sample selection.
- 2023A **HI observations with the Giant Metrewave Radio Telescope (GMRT) – Maharashtra, India**
Building a more realistic dark matter halo for our Milky Way: a focus on nearby Milky Way analogs
2nd Investigator, 2023A, 40 hours
• I prepared the proposal and defined the sample, as well as led the observational mission.
- 2023A **Optical observations with the Perkin-Elmer Telescope, Pico dos Dias Observatory, Brazil**
Looking at the stellar distribution: a focus on Milky Way analogs
2nd Investigator, 2023A, 36 hours
• I led the observational mission, controlling the instruments.
- 2021B **Optical/near-IR observations with the SOAR Telescope – ESO, Chile**
Census of Austral Nearby Galaxies (CANGA survey): a focus on Milky Way analogs
Co-Investigator, 2021B, 42 hours

TEACHING AND OUTREACH EXPERIENCE

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- 2024 **Workshop on Interferometric data reduction with CASA**
Responsible for the workshop and for teaching all the classes – Valongo Observatory, Brazil
- 2023 – present **Research co-advisor of 3 undergraduate students**
- 2024 – present **Member of the GMRT Time Allocation Committee (TAC)**
- 2022 – 2022 **Teaching assistant for Modern and Quantum Physics**
Physics Institute (IF/UFRJ), Federal University of Rio de Janeiro
- 2022–2023 **Organizer of the Cycle of seminars of the Valongo Observatory**
• LOCAL ORGANIZING COMMITTEE
- 2021 – 2021 **Teaching assistant for particle physics, general relativity and cosmology for high school teachers**
Teach classes on general astrophysics and classical and modern physics for high school teachers.
Supervisor: [Prof. Dr. Ribamar Reis](#)
- 2019 **Organizer of the IV Winter School of the Valongo Observatory**
• LOCAL ORGANIZING COMMITTEE – Valongo Observatory, Brazil
Chair: Prof. Dr. Karín Menéndez-Delmestre

CONFERENCES, WORKSHOPS & SCHOOLS

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- 2024 Internship at the NRAO, New Mexico, USA
- 2024 IMPRS PhD Recruitment workshop, Garching bei München, Germany
- 2023 PhD Recruitment workshop, Leiden Observatory, Netherlands
- 2024 IMPRS PhD Recruitment workshop, MPIfR, Bonn, Germany
- 2023 In-person, Surveying the Milky Way conference, Caltech, Pasadena, USA
- 2023 In-person, Latin America Regional IAU Meeting, Montevideo, Uruguay
- 2023 In-person, 1st Rio Dark Matter Meeting, Rio de Janeiro, Brazil
- 2023 In-person, XLVI Annual Meeting of the Brazilian Astronomical Society, Rio de Janeiro, Brazil
- 2022 In-person, ESO Journal Club, ESO Headquarters in Garching, Germany
- 2022 In-person, The VLTI High angular resolution Observations Workshop, ESO Facilities in Santiago, Chile
- 2022 In-person, Data reduction and analysis with VLT instruments GRAVITY and MATISSE, ESO Facilities in Santiago, Chile
- 2022 In-person, ESO Journal Club, ESO Headquarters in Garching, Germany
- 2022 Virtual, XLV Annual Meeting of the Brazilian Astronomical Society, São Paulo, Brazil
- 2021 Virtual, JWST workshop: submitting proposals and analyzing data, Science Ministry, Brazil
- 2021 Virtual, XIX International Spanish Virtual Observatory School, Spain
- 2021 Virtual, Workshop on Science with UV-efficient ground-based spectrographs, Santiago, Chile
- And many others.