

Rogério Monteiro-Oliveira *Ph.D.*

Observational Astrophysicist

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🌐 monteiro-oliveira.com

Large scale structure assembly, galaxy clusters, superclusters of galaxies, galaxy evolution, and weak gravitational lensing.

ORCID ADS Google Scholar ResearchGate LinkedIn

Current Position

Academia Sinica Institute of Astronomy and Astrophysics (ASIAA)

Postdoc fellow

2021 –
Taipei, Taiwan

State University of Santa Cruz (UESC)

Member of the Master's program in Physics

2020 –
Ilhéus, Brazil

Work Experience

State University of Santa Cruz (UESC)

Visiting Professor

> Teaching, research, outreach

2020 – 2021
Ilhéus, Brazil

University of São Paulo - Institute of Astronomy, Geophysics and Atmospheric Sciences (IAG/USP)

Assistant Professor

> Teaching

2020 – 2020
São Paulo, Brazil

University of São Paulo - Institute of Astronomy, Geophysics and Atmospheric Sciences (IAG/USP)

Postdoc fellow

> Research, outreach

2016 – 2020
São Paulo, Brazil

Federal University of Rio Grande do Sul - Astronomy Department of the Institute of Physics (IF/UFRGS)

Assistant Professor

> Teaching, research, outreach

2017 – 2018
Porto Alegre, Brazil

Education

Ph.D. in Astronomy

University of São Paulo - Institute of Astronomy, Geophysics and Atmospheric Sciences (IAG/USP)

> Thesis: *Uma contribuição ao estudo de aglomerados de galáxias em fusão* (A contribution to the study of merging galaxy clusters)

> Advisor: Prof. Eduardo S. Cypriano

> Funded by Conselho Nacional de Desenvolvimento Científico e Tecnológico (CNPq)

2011 – 2016
São Paulo, Brazil

M.S. in Astronomy

University of São Paulo - Institute of Astronomy, Geophysics and Atmospheric Sciences (IAG/USP)

> Thesis: *Aglomerados de galáxias em fusão* (Merging galaxy clusters)

> Advisor: Prof. Eduardo S. Cypriano

> Funded by Coordenação de Aperfeiçoamento de Pessoal de Nível Superior (CAPES)

2009 – 2011
São Paulo, Brazil

B.S. in Physics

University of São Paulo - Institute of Physics (IFUSP)

> Monograph: *Geografia e ecologia das galáxias em superaglomerados* (Geography and ecology of galaxies in superclusters)

> Advisor: Prof. Laerte Sodré Jr.

2022 –
São Paulo, Brazil

Major Collaborations

Ultimate Subaru

Member

2024 –

PFS Sumire

Member

2022 –

LSST

Member

2021 –

Hyper Suprime Camera Survey

Member

2021 –

Dark Energy Survey

External collaborator

2021 –

Javalambre Physics of the Accelerating Universe (JPAS)

Member

2009 – 2020

Community Service

International Journal of Machine Learning and Cybernetics

Paper referee

2024 –

HST Call for Proposals (Cycle 31) <i>Reviewer</i>	2023
James C. Maxwell Telescope Time Allocation Committee <i>Reviewer</i>	2022
The Astrophysical Journal <i>Paper referee</i>	2019 –
Monthly Notices of the Royal Astronomical Society <i>Paper referee</i>	2019 –

🌙 Accepted Proposals for Observation

👤 PI

- Magellan/Baade (1 night @ IMACS): Weak lensing mass reconstruction of a sample of highly disturbed merging clusters recently discovered by eROSITA. 2024.
- Blanco/DECam (1.5 nights @ DECam): Weak lensing mass reconstruction of a sample of highly disturbed merging clusters recently discovered by eROSITA. 2024.
- Magellan/Clay (0.5 night M2FS): Scaling up our understanding of large structure formation: connecting the BCGs to superclusters. 2023.
- CFHT (1.3 h @ WIRCam): Are high redshift ($z > 1.4$) galaxy cluster detections real? 2023.
- CFHT (2.6 h @ WIRCam): Breaking the natural barrier: detecting galaxy clusters at $z > 1.4$. 2022.
- CFHT (13.6 h @ MegaCam): Reconstruction of the mass field in Hercules supercluster using weak gravitational lensing. 2022.
- Gemini (28.5 h @ GMOS/S): Witnessing the formation of the large-scale structure: a dynamical study of massive galaxy clusters undergoing extreme mergers. 2021.
- Gemini (7.7 h @ GMOS/S): Imaging and spectroscopy of the merging galaxy cluster candidate SPT-CL J0411. 2017.
- Gemini (3.5 hours @ GMOS/S): Spectroscopy follow up of the merging galaxy cluster A2034. 2013.

👤 Corresponding author

- Gemini (12.6 h @ GMOS/N): Do the BCGs born special or do they become it? PI: R. Dalal. 2023.
- Gemini (3.9 h @ GMOS/N): Witnessing the birth of a giant: spectroscopic observations of the merging galaxy cluster A1758S. PI: R. Machado. 2023.
- Blanco (1 night @ DECam): Investigating a bullet-like merging galaxy cluster caught in an early phase of interaction. PI: E. Cypriano. 2022.
- Gemini (22.9 h @ GMOS/N): First Characterization of Superclusters detected in the Subaru Hyper Suprime-Cam Survey. PI: R. Dalal. 2022.

👤 Co-PI

- JWST Cycle 3 (22.4 h @ NIRSPEC NIRCAM): Measuring the form of the IMF in passive galaxies at $z = 1.2$. PI: A. Gonzalez. 2024.
- Magellan/Baade (1 night @ FourStar): BCGs: Nature vs. Nurture? PI: R. Dalal. 2024.
- HST Cycle (5 orbits @ ACS/WFC): Clash of Titans: Characterizing SPT-CLJ0307-6225, a major merger in the plane of the sky. PI: A. Zenteno. 2022.
- Gemini (5.5 h @ GMOS/S): A dynamical study of massive galaxy clusters at $z > 0.6$ undergoing extreme mergers. PI: R. Carrasco. 2022.
- Gemini (6.5 h @ GMOS/S): Follow-up of the newly discovered cluster J2305-2248, an “El Gordo” lookalike. PI: E. Cypriano. 2022.
- MMT (1 night @ MMIRS): Exploration of star formation activity in galaxy clusters at $z \sim 1.5$. PI: Y.-T. Lin. 2022.
- Blanco (1 night @ DECam): Evolving galaxies in evolving environments: Searching for jellyfish galaxies in merging clusters. PI: K. Kelkar. 2022.
- GMRT (8 h): Diffuse radio emission from the sloshing cluster Abell 1644 and its connection to ram-pressure stripping. PI: K. Kelkar. 2022.
- CFHT (11.5 h @ MegaCam): Weak lensing mass reconstruction of the supercluster of galaxies SC0028-0001. PI: G. Lima Neto. 2010.

📖 Student Advising

Ryusei Kano » Summer student program (ASIAA) » The power of a semi-analytical 2-body description for describing galaxy cluster merger	2024
Dionysios Gakis » Summer student program (ASIAA) » Anatomy of a giant: investigating environment effects in the Saraswati supercluster	2022
Vitor Hugo Yukio Fugivala » Master's student (UESC) » Structure and dynamics of the Hercules supercluster	2022 -
Thierry Oliveira Candido	2019 - 2020

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- » Undergraduate student (Federal Institute of Mato Grosso do Sul)
- > Mapping the Universe in large scale

Ronaldo Roca Flores

2019 - 2020

- » Undergraduate student (Federal Institute of Mato Grosso do Sul)
- > Mapping the Universe in large scale

📖 Teaching

UESC

2020 - 2021

- » Professor | 2 Physics courses

IAG/USP

2020

- » Professor | 2 Astronomy courses

IF/UFRGS

2017 - 2018

- » Professor | 5 Astronomy courses

IAG/USP

2012 - 2015

- » Teaching assistant | 6 Astronomy courses

University Braz Cubas

2011

- » Lecturer | 1 Physics course

💬 Colloquia & Seminars

Istituto Nazionale di Fisica Nucleare, Turin, Italy

Oct., 2023

- » Weekly Seminar

- > Seeing the micro through the macro: collisions among galaxy clusters and their impact on dark matter properties investigation

National Central University, Taoyuan, Taiwan

Oct., 2022

- » Weekly Colloquia

- > Connecting Macro to Micro: How can studying the largest structures in the universe help us unveil the nature of dark matter?

ASIAA, Taipei, Taiwan

Nov., 2021

- » Weekly Colloquia

- > Galaxy Clusters: the Largest Laboratories in the Universe

UESC, Ilhéus, Brazil

Jun., 2018

- » Special Seminar

- > Aglomerados de galáxias: os maiores laboratórios do Universo

Universidade Cruzeiro do Sul, São Paulo, Brazil

May 2018

- » Weekly Seminar

- > C.S.I. (Cluster Science Investigation): solving the case of a cosmic crash

IF/UFRGS, Porto Alegre, Brazil

Jun., 2017

- » Weekly Seminar

- > Unveiling the Universe dark side through the merging galaxy clusters

📄 Conferences

10th Galaxy Evolution Workshop

Aug., 2024

- 📍 Taipei, Taiwan 🗣️ Can the dichotomy scenario explain the observed variety of elliptical galaxies? (oral contribution)

The Second SUPER-IRNET Workshop: Sparkling Our Collaboration at the Cosmic Gate

Jul., 2024

- 📍 Beppu, Japan 🗣️ Breaking the natural barrier: how reliable is cluster detection beyond $z = 1.4$? (oral contribution)

Galaxy Groups in the Era of eROSITA and Euclid

Jul., 2024

- 📍 Sesto, Italy 🗣️ From photons to bytes: combining multiple wavelengths and numerical simulations to describe the large scale structure formation (oral contribution)

First Structures in the Universe

Jun., 2024

- 📍 Paris, France 🗣️ Are the detections of galaxy clusters at $z > 1.5$ real? (oral contribution)

Taipei Astronomy Workshop

Jan., 2024

- 📍 Taipei, Taiwan 🗣️ Do normality tests serve as effective indicators for the dynamical state of galaxy clusters? (oral contribution)

Annual Meeting of the Physical Society of Taiwan

Jan., 2024

- 📍 Taoyuan, Taiwan 🗣️ Beyond Hubble's Tuning Fork: is the classification of elliptical galaxies more complex than we thought?

A journey through galactic environments: From the halo assembly bias to the satellite quenching

Sep., 2023

- 📍 Porto Ercole, Italy 🗣️ Is the taxonomy of early-type galaxies more complicated than we thought?

NECO school: science and methods for wide-field photometric and spectroscopic extragalactic and cosmological surveys

Aug., 2023

- 📍 Kyoto, Japan 🗣️ Beyond Hubble's Tuning Fork: is the classification of elliptical galaxies more complex than we thought? (oral contribution)

Asia-Pacific Regional IAU Meeting (APRIM 2023) 📍 Koriyama, Japan 🗣️ Is the classification of early-type galaxies more complex than we thought?	Aug., 2023
Asia-Pacific Regional IAU Meeting (APRIM 2023) 📍 Koriyama, Japan the massive Saraswati supercluster going to disappear in the future?	Aug., 2023
Annual Meeting of the Astronomical Society of the Republic of China (Taiwan) 📍 Kaohsiung, Taiwan 🗣️ Investigating the dichotomy among early-type galaxies	May, 2023
PFS Science meeting 📍 Remote 🗣️ Is the dichotomy among early-type galaxies real?	Mar., 2023
9th Galaxy Evolution Workshop 📍 Kashiwa, Japan 🗣️ Is the dichotomy among early-type galaxies real?	Feb., 2023
Annual Meeting of the Astronomical Society of the Republic of China (Taiwan) 📍 Minxiong, Taiwan 🗣️ A major galaxy cluster merger caught by eROSITA	Sep., 2022
Annual Meeting of the Physical Society of Taiwan 📍 Taipei, Taiwan 🗣️ Witnessing the birth of the large-scale structure: anatomy and dynamical analysis of Hercules supercluster	Jan., 2022
Galaxy Cluster Formation II 📍 Remote 🗣️ Peculiar features arising from merging galaxy clusters: the case of A1644 and A2034	Jun., 2021
JSPS-FAPESP Workshop on dark energy, dark matter, and galaxies 📍 São Paulo, Brazil 🗣️ Merging galaxy clusters and the search for self-interacting dark matter (oral contribution)	Feb., 2019
SnowCluster - The Physics of Galaxy Clusters 📍 Salt Lake City, USA 🗣️ Unveiling the dark side of the Universe through the merging galaxy clusters	Mar., 2018
ICTP-SAIFR School on Dark Matter 📍 São Paulo, Brazil	Jul., 2016
IAU General Assembly Meeting 📍 Honolulu, USA 🗣️ The merging cluster Abell 1758: an optical and dynamical view	Aug., 2015
10th J-PAS Collaboration Meeting 📍 Paraty, Brazil 🗣️ The merging cluster Abell 1758: adding new pieces into a complex puzzle	Mar., 2015
Cosmology with Galaxy Clusters 📍 Madrid, Spain 🗣️ The merging cluster Abell 1758: adding new pieces into a complex puzzle	Nov., 2014
XXXVIII Annual Meeting of the Brazilian Astronomical Society 📍 Búzios, Brazil 🗣️ The merging cluster Abell 1758	Sep., 2014
GMT Science Workshop 📍 São Paulo, Brazil 🗣️ The merging cluster 1758	Nov., 2013
SnowCLUSTER: Physics of Galaxy Clusters 📍 Salt Lake City, USA 🗣️ Dynamical Analysis of the Merging Cluster Abell 1758	Mar., 2013
USP Conference: Cosmology, large scale structure and first objects 📍 São Paulo, Brazil 🗣️ The merging cluster 1758	Feb., 2013
XVI IAG/USP Advanced School on Astrophysics 📍 Itatiba, Brazil 🗣️ The merging cluster Abell 1758	Nov., 2012
XXXVII Annual Meeting of the Brazilian Astronomical Society 📍 Águas de Lindóia, Brazil 🗣️ The merging cluster Abell 1758	Oct., 2012
Growing up at high redshift: from proto-clusters to galaxy clusters workshop 📍 Madrid, Spain 🗣️ A multi-technique analysis of the merging cluster Abell 1758	Sep., 2012
Science with LSST: A Brazilian/US joint workshop 📍 Campos do Jordão, Brazil 🗣️ Merging galaxy clusters	Apr., 2012
South American Gemini Data Workshop 📍 São José dos Campos, Brazil 🗣️ Merging galaxy clusters	Oct., 2011
XXXVI Annual Meeting of the Brazilian Astronomical Society 📍 Águas de Lindóia, Brazil 🗣️ Merging galaxy clusters	Sep., 2011
XXXV Annual Meeting of the Brazilian Astronomical Society 📍 Passa Quatro, Brazil 🗣️ Merging galaxy clusters	Sep., 2010
I Jayme Tiomno School of Cosmology 📍 Rio de Janeiro, Brazil 🗣️ Merging galaxy clusters	Jul., 2010

📄 Papers (published)

19. Machado, R. E. G., Volert, R. C., Albuquerque, R. P., **Monteiro-Oliveira, R.**, Lima Neto, G. B., 2024, ApJ, 970, 160. [Simulating the Arrival of the Southern Substructure in the Galaxy Cluster Abell 1758](#)

18. Albuquerque, R. P., Machado, R. E. G., **Monteiro-Oliveira, R.**, 2024, MNRAS, 530, 2146. [Unravelling the collision scenario of the dissociative galaxy cluster Abell 56 through hydrodynamic simulations](#)
17. Hernández-Lang, D., Zenteno, A., Diaz-Ocampo, A., Cuevas, H., Clancy, J., Prado P. H., Aldás, F., Pallero, D., **Monteiro-Oliveira, R.**, et al., 2022, MNRAS, 517, 4355. [Clash of Titans: A MUSE dynamical study of the extreme cluster merger SPT-CL J0307-6225](#)
16. **Monteiro-Oliveira, R.**, 2022, MNRAS, 515, 3674. [A major galaxy cluster merger caught by eROSITA: weak lensing mass distribution and kinematic description](#)
15. **Monteiro-Oliveira, R.**, Morell, D. F., Sampaio, V. M., Ribeiro, A. L. B., de Carvalho, R. R., 2022, MNRAS, 509, 3470. [Unveiling the internal structure of Hercules supercluster](#)
14. Bonoli, S. + 163 co-authors, **Monteiro-Oliveira, R.**, et al., 2021, A&A, 653, A31. [The miniJPAS survey: a preview of the Universe in 56 colours](#)
13. **Monteiro-Oliveira, R.**, Soja, A. C., Ribeiro, A. L. B., Bagchi, J., Sankhyayan, S., Candido, T. O., Flores, R. R., 2021, MNRAS, 501, 756. [Probing Saraswati's heart: evaluating the dynamical state of the massive galaxy cluster A2631 through a comprehensive weak lensing and dynamical analysis](#)
12. Moura, M. T.; Machado, R. E. G., **Monteiro-Oliveira, R.**, 2021, MNRAS, 500, 1858. [Simulations of the merging galaxy cluster Abell 2034: what determines the level of dissociation](#)
11. Kelkar, K., Dwarakanath K. S., Poggianti B. M., Moretti A., **Monteiro-Oliveira, R.**, et al., 2020, MNRAS, 496, 442. [Passive spirals and shock influenced star formation in the merging cluster Abell 3376](#)
10. Doubrawa, L., Machado, R. E. G., Laganá, T. F., Lima Neto, G. B., **Monteiro-Oliveira, R.**, Cypriano, E. S., 2020, MNRAS, 495, 2022. [Simulations of gas sloshing induced by a newly discovered gas poor substructure in galaxy cluster Abell 1644](#)
9. **Monteiro-Oliveira, R.**, Doubrawa, L., Machado, R. E. G., Lima Neto, G. B., Molina, M. C.; Cypriano, E. S., 2020, MNRAS, 495, 2007. [Revising the merger scenario of the galaxy cluster Abell 1644: a new gas poor structure discovered by weak gravitational lensing](#)
8. Mendes de Oliveira, C. L., + 118 authors, **Monteiro-Oliveira, R.**, et al., 2019, MNRAS, 489, 241. [The Southern Photometric Local Universe Survey \(S-PLUS\): improved SEDs, morphologies, and redshifts with 12 optical filters](#)
7. Molino, A., Costa-Duarte, M.V., Mendes de Oliveira, C., Lima Neto, G. B., Cypriano, E. S., Sodr e Jr, L., Coelho, P., Chow-Mart inez, M., **Monteiro-Oliveira, R.**, et al., 2019, A&A, 622, A178. [J-PLUS: On the identification of new cluster members in the double galaxy cluster A2589 & A2593 using PDFs](#)
6. Mahadev, P., **Monteiro-Oliveira, R.**, Bagchi, J., Simionescu, A., Limousin, M., Raychaudhury, S., 2019, MNRAS, 482, 5093. [A combined X-ray, optical and radio view of the merging galaxy cluster MACS J0417-1154](#)
5. **Monteiro-Oliveira, R.**, Cypriano, E. S., Vitorelli, A. Z., Ribeiro, A. L. B., Sodr e, L., Dupke, R., Mendes de Oliveira, C. L., 2018, MNRAS, 481, 1097 [New insights on the dissociative merging galaxy cluster Abell 2034](#)
4. Soja, A. C., Sodr e, L., **Monteiro-Oliveira, R.**, Cypriano, E. S., Lima Neto, G. B., 2018, MNRAS, 477, 3279. [A Gemini view of the galaxy cluster RXC J1504-0248: insights on the nature of the central gaseous filaments](#)
3. **Monteiro-Oliveira, R.**, Lima Neto, G. B., Cypriano, E. S., Machado, R. E. G., Capelato, H. V., Lagan a, T. F., Durret, F., Bagchi, J., 2017b, MNRAS, 468, 4566. [Weak lensing and spectroscopic analysis of the nearby dissociative merging galaxy cluster Abell 3376](#)
2. **Monteiro-Oliveira, R.**, Cypriano, E. S., Machado, R. E. G., Lima Neto, G. B., Ribeiro, A. L. B., Sodr e, L., Dupke, R., 2017a, MNRAS, 466, 2614. [The merger history of the complex cluster Abell 1758: a combined weak lensing and spectroscopic view](#)
1. Machado, R. E. G., **Monteiro-Oliveira, R.**, Lima Neto, G. B., Cypriano, E. S., 2015, MNRAS, 451, 3309. [Simulating the shocks in the dissociative galaxy cluster Abell 1758N](#)

📄 Conference Proceedings

3. **Monteiro-Oliveira, R.** [Is the taxonomy of early-type galaxies more complicated than we thought?](#) A Journey Through Galactic Environments: From the Halo Assembly Bias to the Satellite Quenching, 2023.
2. Fugivala, Vitor H. Y., **Monteiro-Oliveira, R.**, Ribeiro, A. L. B. [Mapping the Hercules supercluster to understand large scale structure formation and environmental effects on galaxies.](#) Proceedings of XLV Meeting of Brazilian Astronomical Society. 2022.
1. **Monteiro-Oliveira, R.** [Peculiar features arising from merging galaxy clusters: the case of A1644 and A2034.](#) Galaxy Cluster Formation II. 2021.

📄 Papers (submitted)

4. Zenteno, A., Kluge, M., Kharkrang, R., Hernandez-Lang, D., Damke, G., Saro, A., **Monteiro-Oliveira, R.**, et al., 2024. Submitted to A&A (aa52440-24). eROSITA clusters dynamical state and their impact on the BCG luminosity.
3. **Monteiro-Oliveira, R.**, Lin, Y-T., Chen, W-H., Chuang, C-Y., Abdurro'uf, Wu, P-F., 2024. Submitted to ApJ. [No Evidence of a Dichotomy in the Elliptical Galaxy Population](#)

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2. Ding, J., Dalal, R., Sunayama, T., Strauss, M. A., Oguri, M., Okabe, N., Hilton, M., **Monteiro-Oliveira, R.**, Sifón, C., Staggs, S. T., 2024. Submitted to MNRAS (MN-24-1932-MJ). Miscentering of Optical Galaxy Clusters Based on Sunyaev-Zeldovich Counterparts.
1. Chen, T-C., Lin, Y-T., Schive, H-Y., Oguri, M., Chen, K-F., Okabe, N., Ali, S., Bottrell, C., Dalal, R., Koyama, Y., **Monteiro-Oliveira, R.**, et al., 2024, Submitted to ApJ. [A Systematic Search of Distant Superclusters with the Subaru Hyper Suprime-Cam Survey](#)

⚙️ Referees

Eduardo S. Cypriano Associate Professor IAG/USP eduardo.cypriano@iag.usp.br
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Yen-Ting Lin Research Fellow ASIAA ytl@asiaa.sinica.edu.tw

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