Clécio R. Bom, Phd
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Researcher in the fields of Artificial Intelligence applied to several domains including Physics, Astrophysics, Geophysics, Big data Astronomy.

1. Appointments

2025 -Present Head of Artificial Intelligence Laboratory for Physics
2025 -Present Technology Researcher, Centro Brasileiro de Pesquisas Físicas (Brazilian Center for Research in Physics)
2020 -2025 Assistant Professor, Centro Brasileiro de Pesquisas Físicas (Brazilian Center for Research in Physics)
2018 –**2018** (**3 months**) Visiting scholar at the University of Chicago
2014-2020 - Assistant Professor, Centro Federal de Educação Técnologica Celso Suckow da Fonseca (CEFET), Rio de Janeiro.
2013-2014 – Physicist, Fundação de Apoio a Computação Científica.

2. Professional Preparation

Undergraduate
Institution(s): Universidade Federal do Rio de Janeiro
Location: Rio de Janeiro, **Brazil**
Major Degree & Year: Physics (2011)

Graduate
Institution(s): Centro Brasileiro de Pesquisas Físicas (Brazilian Center for Research in Physcics)
Location: Rio de Janeiro, **Brazil**
Major Degree & Year: Master in Physics (2013)
Advisor´s name: Dr. Nelson Pinto-Neto

Graduate
Institution(s): Centro Brasileiro de Pesquisas Físicas (Brazilian Center for Research in Physcics)
Location: Rio de Janeiro, **Brazil**
Major Degree & Year: PhD in physics (2017)
Advisor´s name: Dr. Martin Makler

Postdoctoral
Institution(s): Fermilab
Location: Batavia, Il, USA
Area: Astronomical instrumentation
Inclusive Dates (Years): 2017-2018 (1 year)
Supervisor´s name: Dr. Juan Estrada

3. Grants and Honors:

- Jacob Palis Award by the Fulbright Comission (USA) and Brazilian Academy of Sciences (2025)
- Research Award from the Brazil Conference at Havard and MIT (2024)
- Elected Member of Brazilian Academy of Sciences (2023)
- Invited talk to Rio Oil and Gas (2024).
- Invited Talk to Rio Innovation Week, 2023
- Appointed spokesperson Southern Photometric Local Universe Survey
- Appointed Builder status of DEcam Local Exploration Survey
- Nominated to BRICS Young Scientist Forum by the Brazilian Academy of Sciences (2022)
- Brazilian Productivity grant (CNPq, 2022)
- Early Career Productivity Grant from Rio de Janeiro Science Foundation – (FAPERJ 2022)
- Early Career Scientist Grant (Apoio Cientista Fluminense Grant FAPERJ – 2022)
- Thematic Research Center Grant (FINEP 2024)
- Proposal Letter for Brazilian National Fund for Science and Technology Development (FNDCT / Brazilian Ministry of Science – 2022 ,)
- 2022 Innovator Prize from Petrobrás (Brazilian Oil and Gas Company Innovator prize)
- Invited talk to Frontiers of Science by the UK Royal Astronomical Society/ FAPESP (2020 – São Paulo, Brazil)
- First Place in the II international Strong Gravitational Lensing Finding Data Challenge (2020)
- Mentor in the awarded project during the Hackcovid19, a hackaton to build solutions to COVID, prize by NVIDIA.
- Appointed "Visiting Scholar" at The University of Chicago (Feb-Apr-2018)
- high academic performance Scholarship from Rio de Janeiro Science Foundation ("Bolsa Nota 10 Faperj, 2012)
- Honor Mention at I Brazilian National Meeting of Physics Graduate Students (2011)
- Winning contribution at XVII CBPF Undergrad Workshop (2010)

4. Responsibilities/duties:

Leader of the Taskforce on LLMs and Foundational Models for TVS Science collaboration of the Vera Rubin Observatory (2025-present).

Head of Artificial Intelligence Laboratory for Physics (2025 – present).

Southern Photometric Local Universe Survey Spokesperson (2023- present).

Coordinator of the Vera Rubin Static Strong Gravitational Data Challenge (2024-2025).

Principal developer in the Deep Learning based Galaxy Morphological Catalog pipeline production for Southern Photometric Local Universe Survey (S-PLUS,2021).

Co-Lead developer in the Photometric redshift Deep Learning pipeline for DECam Local Volume Exploration Survey (DELVE, 2022).

Co-Lead developer of the Early Deep Learning Transient Classifier for FINK LSST/Vera Rubin

Principal Investigator (PI) in S-PLUS Transient Extension Program (2022 - present).

PI in Gravitational Wave Follow-up program: SOAR Spectroscopy of LIGO/Virgo/KAGRA O4 Transients (2022- present).

S-PLUS Galaxy Morphology working group leader (2019-2024).

Coordination/Point of contact of MoU between Brazil and Portugal for cooperation in Astroparticles and Cosmology (2022 – present).

Working group Leader of CBPF-Petrobrás Cooperation in Artificial Intelligence in Petrophysics (2014- present).

5. Publications
Referred papers: 90. 13 as first author. 23 as second/third author. 3 Patents. Selected contributions:

Bom, Clecio R., A., Palmese. " Standard Siren Cosmology with Gravitational Waves from Binary Black Hole Mergers in Active Galaxy Nuclei.". **Physical Review D**, v. 110, p. 083005, 2024, 2024.

Bom, C. R., Alfradique, V., Palmese, A., Teixeira, G., Santana-Silva, L., et al. A dark standard siren measurement of the Hubble constant following LIGO/Virgo/KAGRA O4a and previous runs. **Monthly Notices of the Royal Astronomical Society** , v. 1, p. stae2390, 2024.

Bom, Clecio R., Annis, J., Garcia, A., Palmese, A., Sherman, N., Soares-Santos, M et al. "Designing an Optimal Kilonova Search using DECam for Gravitational Wave Events.". arXiv preprint 2302.04878 . **The Astrophysical Journal**, v. 960, p. 122, 2024.

Yang, Yu-Han ; Troja, Eleonora ; O?Connor, Brendan ; Fryer, Chris L. ; Im, Myungshin ; Durbak, Joe ; Paek, Gregory S. H. ; Ricci, Roberto ; **Bom, Clécio R**. ; Gillanders, James H. ; Castro-Tirado, Alberto J. ; Peng, Zong-Kai ; Dichiara, Simone ; Ryan, Geoffrey ; Van Eerten, Hendrik ; Dai, Zi-Gao ; Chang, Seo-Won ; Choi, Hyeonho ; De, Kishalay ; Hu, Youdong . A lanthanide-rich kilonova in the aftermath of a long gamma-ray burst. **NATURE**, v. 626, p. 742-745, 2024.

Darc, P., **Bom, C. R.**, Fraga, B., & Kilpatrick, C. D. Kilonova Spectral Inverse Modelling with Simulation-based Inference: An Amortized Neural Posterior Estimation Analysis. **The Astrophysical Journal**, *971*(1), 82, 2024.

7. Scientific products:

Schwartz, **Bom** et al. AI-Scope. A Scientific Platafform for Astronomical Data Exploration with AI. https://ai-scope.cbpf.br; 2025.

Bom et al. 2022. DECam Local Exploration Survey Data Release 2 Photometric Redshift Catalog https://datalab.noirlab.edu/delve/photoz.php

Bom et al. 2021. Southern Photometric Local Universe Survey ETG/LTG Galaxy Catalog DR1 https://doi.org/10.5281/zenodo.4891060

Bom et al. 2023. Southern Photometric Local Universe Survey ETG/LTG Galaxy Catalog DR3 https://splus.cloud/

8. Synergistic Activities

2017 – Interview for national TV (Globo channel) about Deep Learning.
2017-2018 Urban Intervention: Support and content development for the 240 square meters mural painting dedicated to science named: “Grafite da Ciência” (Science Graffiti). Website http://www.grafite-ciencia.cbpf.br/
2020 – Mentor in hackathon, HackCovid, on Data Science methods to address the COVID crisis.
2020 – Participation in a public school Science fair (IV feira de ciências do CAP-Uerj).
2023 – Live Interview for national TV (Record News channel) about Deep Learning applied to Astronomy
2025 – Organizaton of Hack4dev (Hackaton for development supported by The Office of Astronomy for Development of the International Astronomical Union).
2025 – Conception and Organization of “The first AI for Physics School.” At CBPF.