

Luis Angel Gutiérrez Soto

CURRICULUM VITAE

PERSONAL INFORMATION

Nationality Colombian
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GitHub <https://github.com/AngelGSoto>
Website <https://angelgsoto.github.io/>
Languages Spanish (Native), English (Fluent), Portuguese (Fluent)

EDUCATION

PhD in Astronomy 2015-2019
*Observatório do Valongo, Universidade Federal do Rio de Janeiro (UFRJ),
Rio de Janeiro, Brazil*
Advisors: Denise Rocha Gonçalves and Stavros Akras

Master in science (Astrophysics) 2012-2015
*Centro de Radioastronomía y Astrofísica (CRYA), Universidad Nacional
autónoma de México (UNAM), Morelia, Michoacán, México*
Advisor: William John Henney

Bachelor of Education in Mathematics and Physics 2005-2010
Universidad Popular del Cesar (UPC), Valledupar, Cesar, Colombia
Advisor: Elio Fabio Mejía Henao

ADDITIONAL EDUCATION

**Third Winter School of the Valongo Observatory.
Short-term course** 2017
Observatório do Valongo, UFRJ, Rio de Janeiro, Brazil

**XX Special Courses Cycle of the National Observatory.
Short-term course** 2015
Observatório Nacional, Rio de Janeiro, Brazil

**Superior Normalist with Emphasis
in Spanish Language** 2003-2004
Escuela Normal Superior María Inmaculada, Manaure, Cesar, Colombia

ACADEMIC AND PROFESSIONAL PROFILE

Postdoctoral Researcher 2022-Present
*Instituto de Astrofísica de La Plata,
CONICET – UNLP, La Plata, Argentina*

Supervisor: Favio R. Faifer
Co-supervisor: Claudia Lucia Mendes de Oliveira

Postdoctoral Researcher 2020-2022
*Instituto de Astronomia, Geofísica e Ciências Atmosféricas (IAG),
Universidade de São Paulo, Brazil*
Supervisor: Claudia Lucia Mendes de Oliveira

TEACHING

Assistant Professor 2016
*Stellar Evolution, University level,
Observatório do Valongo, UFRJ, Rio de Janeiro, Brazil*

Assistant Professor 2016
*Extragalactic Astronomy, University level,
Observatório do Valongo, UFRJ, Rio de Janeiro, Brazil*

Mathematics and Physics Teacher 2010
*Centro de Enseñanza Media “Santa Teresita”, High School,
Valledupar, Cesar, Colombia*

Mathematics and Physics Teacher 2009
*Institución Educativa Manuel Germán Cuello, High School,
Valledupar, Cesar, Colombia. Pedagogical and Educational
Practices of the Bachelor’s Degree in Mathematics and Physics*

OBSERVATIONAL EXPERIENCE

PI 2022
SOAR Telescope
Spectroscopic confirmation of planetary nebula candidates in VPHAS+ (DR3) and ALLWISE,
impacting Galaxy’s PNe statistics

Telescope Operator 2020-2024
T80-Sur Telescope, Southern Photometric Local Universe Survey (S-PLUS)
Responsibilities included telescope operation, data acquisition, and instrument maintenance

MENTORSHIP AND SUPERVISION

Scientific Initiation 2020-2024
Giovanna Liberato Cézar

The identification and optical follow-up spectroscopy of PN and SySt candidates in
photometric surveys.
Observatório do Valongo, Universidade Federal do Rio de Janeiro.
Role: Co-supervisor

PARTICIPATION IN UNDERGRADUATE THESIS COMMITTEES

On February 27, 2024, I participated as a member of the evaluation committee for the final project titled “Photometric Selection and Spectroscopic Confirmation of Planetary Nebulae and Symbiotic Stars in the Galactic Plane”, presented by Giovanna Liberato C  zar

REVIEWER FOR INTERNATIONAL JOURNAL

International Journal of Electrical and Computer Engineering (IJECE).

Served as a peer reviewer for submitted manuscripts

RESEARCH VISITS

Observat  rio do Valongo, Universidade Federal do Rio de Janeiro (UFRJ). 2024
Rio de Janeiro, Brazil
Host: Denise Rocha Gon  alves and Marco Grossi

Center for the Study of the Physics of the Cosmos of Arag  n (CEFCA). 2018
Teruel, Spain
Host: Carlos L  pez Sanjuan

AWARDS AND TITLES

Young Researcher and Innovator
“Virginia Guti  rrez de Pineda” 2010
Colciencias, Colombia

SKILLS

- **Programming:** PYTHON, FORTRAN
- **Software:** TOPCAT, ALADIN, CLOUDY, L^AT_EX
- **Data Query:** Astronomical Data Query Language (ADQL)
- **Machine Learning:** Applied to astronomy and astrophysical simulations
- **Linux:** Development and maintenance of data analysis servers, task automation, system monitoring
- **Shell Scripting:** Automation of tasks
- **Astronomy:** Telescope operation, data processing, astronomical instrumentation
- **Experience:** Operated T80-Sul telescope for Southern Photometric Local Universe Survey (S-PLUS) project

REFEREED ARTICLES

1. *The Fourth S-PLUS Data Release: 12-filter photometry covering 3000 square degrees in the Southern Hemisphere*
F. R. Herpich, F. Almeida-Fernandes, G.B Oliveira Schwarz, ... **L. A. Gutiérrez-Soto** et al., 2024, A&A, submitted.
2. *The S-PLUS Fornax Project (S+FP): A first 12-band glimpse of the Fornax galaxy cluster*
A. V. Smith Castelli, A. Cortesi, R. F. Haack, A. R. Lopes, J. Thainá-Batista, ... **L. A. Gutiérrez Soto** et al., 2024, MNRAS.
3. *Unveiling compact planetary nebulae: Broad-band survey analysis and LAMOST confirmation*
L. A. Gutiérrez-Soto, M. Belén Mari, W. A. Weidmann, F. R. Faifer, 2024, NewA, 109, 102207.
4. *Euclid preparation. XXVII. A UV-NIR spectral atlas of compact planetary nebulae for wavelength calibration.*
Euclid Collaboration: K. Paterson, M. Schirmer, Y. Copin, J. -C. Cuillandre, W. Gillard, **L. A. Gutiérrez Soto** et al., 2023, A&A, 674, A172.
5. *Spectroscopic analysis tool for intEgraL fieLd unIt daTacubEs (SATELLITE): case studies of NGC 7009 and NGC 6778 with MUSE.*
S. Akas, H. Monteiro, J. R. Walsh, J. García-Rojas, I. Aleman, ... **L. A. Gutiérrez-Soto** et al., 2022, MNRAS, 512, 2202.
6. *Data Release 2 of S-PLUS: accurate template-fitting based photometry covering 1000 square degrees in 12 optical filters.*
F. Almeida-Fernandes, L. Sampedro, F. R. Herpich, A. Molino, C. E. Barbosa, ... **L. A. Gutiérrez-Soto** et al., 2022, MNRAS, 511, 4590.
7. *Catalogue of the central stars of planetary nebulae. Expanded edition.*
W. A. Weidmann, M. B. Mari, E. O. Schmidt, G. Gaspar, M. M. Miller Bertolami, G. A. Oio, **L. A. Gutiérrez-Soto**, M. G. Volpe, R. Gamén, and D. Mast, 2020, A&A, 640, A10.
8. *J-PLUS: Tools to identify compact planetary nebulae in the Javalambre and southern photometric local universe surveys.*
L. A. Gutiérrez-Soto, D. R. Gonçalves, S. Akas, A. Cortesi, C. López-Sanjuan, M. A. Guerrero et al., 2020, A&A, 633, A123.
9. *The Southern Photometric Local Universe Survey (S-PLUS): improved SEDs, morphologies, and redshifts with 12 optical filters.*
C. Mendes de Oliveira, T. Ribeiro, W. Schoenell, A. Kanaan, R. A. Overzier, ... **L. A. Gutiérrez-Soto**, et al., 2019, MNRAS, 489, 241.
10. *J-PLUS: The Javalambre Photometric Local Universe Survey.*
A. J. Cenarro, M. Moles, D. Cristóbal-Hornillos, A. Marín-Franch, A. Ederoclite, ... **L. A. Gutiérrez-Soto** et al., 2019, A&A, 622, A176.

NON-PEER-REVIEWED ARTICLES

1. *Bow shocks, bow waves, and dust waves. IV. Shell shape statistics.*
W. J. Henney, J. A. Tarango-Yong, **L. A. Gutiérrez-Soto**, S. J. Arthur, 2019, arXiv, arXiv:1907.00122.

These articles are preprints or manuscripts available on arXiv and have not yet undergone peer review.

PUBLISHED WORKS IN CONFERENCE PROCEEDINGS

1. *Photometric candidate selection and spectroscopic confirmation of new PNe and SySts in the Galactic plane*,
Giovanna Liberato, Denise R Gonçalves, **L. A. Gutiérrez-Soto**, S. Akas, 2023, *Boletim da Sociedade Astronômica Brasileira*. Vol. 34, pp. 100-103.
2. *Exploring the population of H α emitters in the Southern Photometric Local Universe Survey (S-PLUS)*.
L. A. Gutiérrez-Soto, R. Lopes de Oliveira, S. Akas, et al., 2023, BAAA, 64, 187.
3. *Identification of interacting galaxies in the S-PLUS database*.
G. B Oliveira Schwarz, N. M. Cardoso, A. Cortesi, A. V. Smith Castelli, G. Lucatelli, ... **L. A. Gutiérrez-Soto** et al., 2022, BAAA, Buenos Aires. *Boletín de la Asociación Argentina de Astronomía*, Vol. 63, pp. 259-261.
4. *Identifying Galactic halo PN candidates in the imaging surveys: J-PLUS/S-PLUS and J-PAS*.
L. Gutiérrez-Soto, D. R. Gonçalves, S. Akas, A. Cortesi, A. Ederoclite, et al., Latin American Regional IAU Meeting (LARIM) Cartagena 2016, 2017, Cartagena de Indias, Colombia. *Rev. Mex. Astron. Astrofís. (Serie de Conferencias)*, Vol. 49, pp. 162-162.

TALKS AND POSTERS AT SCIENTIFIC MEETINGS

1. *S-PLUS: An atlas of integrated H α fluxes for planetary nebulae in the Magellanic Clouds*.
L. A. Gutiérrez-Soto, A. R. Lopes, A. V. Smith Castelli, F. R. Faifer & R. Haack. San Juan, Argentina, 2023. Conference. La 65^o Reunión Anual de la Asociación Argentina de Astronomía. **Poster Presenter**.
2. *An Integrated H α Flux Atlas of Planetary Nebulae in the Magellanic Clouds: Combining S-PLUS Photometry and Spectroscopic Analysis*.
L. A. Gutiérrez-Soto, A. R. Lopes, A. V. Smith Castelli & F. R. Faifer. Montevideo, Uruguay, 2023. Conference. XVII Latin American Regional IAU Meeting. **Speaker**.
3. *S-PLUS: An atlas of integrated H α fluxes for planetary nebulae in the Magellanic Clouds*.
L. A. Gutiérrez-Soto, A. R. Lopes, A. V. Smith Castelli & F. R. Faifer. La Serena, Chile. 2023, Conference. Galaxy Groups and Clusters III: Laboratories to study Galaxy Evolution (GGCIII). **Poster Presenter**.
4. *An atlas of integrated H α fluxes for planetary nebulae in the Magellanic Clouds*.
L. A. Gutiérrez-Soto, A. R. Lopes, A. V. Smith Castelli & F. R. Faifer. Córdoba, Argentina, 2023, Conference. XII Friends of Friends Meeting. **Poster Presenter**.
5. *Exploring the population of H α emitters in the Southern Photometric Local Universe Survey (S-PLUS)*.

- L. A. Gutiérrez-Soto**, R. Lopes de Oliveira, S. Akas, et al., 2022, Conference. 64° Reunión Anual de la Asociación Argentina de Astronomía. **Speaker**.
6. *Revealing the population of compact emission line sources in the Southern Photometric Local Universe Survey (S-PLUS)*.
L. A. Gutiérrez-Soto & S-PLUS Collaboration. 17th S-PLUS Collaboration Meeting, 2022, Rio de Janeiro, Brazil. **Speaker**.
 7. *H α emitters from the Southern Photometric Local Universe Survey (S-PLUS)*.
L. A. Gutiérrez-Soto, R. Lopes de Oliveira, S. Akas, D. R. Gonçalves, C. Mendes de Oliveira & S-PLUS Collaboration. 16th S-PLUS Collaboration Meeting, 2021, São Paulo, Brazil. **Poster Presenter**.
 8. *Planetary nebulae in S-PLUS*.
L. A. Gutiérrez-Soto, D. R. Gonçalves, S. Akas & S-PLUS Collaboration. 15th S-PLUS Collaboration Meeting, 2021, São Paulo, Brazil. **Speaker**.
 9. *Planetary nebulae in S-PLUS*.
L. A. Gutiérrez-Soto, D. R. Gonçalves, S. Akas & S-PLUS Collaboration. 14th S-PLUS Collaboration Meeting, 2020, São Paulo, Brazil. **Speaker**.
 10. *Tools to identify planetary nebulae and symbiotic stars*.
L. A. Gutiérrez-Soto, Denise R. Gonçalves, Stavros Akas and the J-PLUS & S-PLUS collaborations. 10th S-PLUS Meeting. 2019, São Paulo, Brazil. **Speaker**.
 11. *Photometric tools to select planetary nebulae and symbiotic stars in J-PLUS and S-PLUS surveys*.
L. A. Gutiérrez-Soto, Denise R. Gonçalves, Stavros Akas and J-PLUS & S-PLUS collaborations. II Workshop: chemical abundances in gaseous nebulae. 2019, São José dos Campos, São Paulo, Brazil. **Poster Presenter**.
 12. *Detecting Galactic halo planetary nebulae and symbiotic stars in multi-band photometric surveys*.
L. A. Gutiérrez-Soto, D. R. Gonçalves & S. Akas. XXXth General Assembly of the International Astronomical Union (IAU). Division G: Stars and Stellar Physics, 2018, Vienna, Austria. **Speaker**.
 13. *Galactic halo planetary nebulae and symbiotic stars in multi-band photometric surveys*.
L. A. Gutiérrez-Soto, D. R. Gonçalves S. Akas. Workshop "Science with SOAR and Gemini telescopes: preparing for the GMT". 2018, São José dos Campos, São Paulo, Brazil. **Speaker**.
 14. *S-PLUS, J-PLUS and J-PAS in the search for planetary nebulae*.
L. A. Gutiérrez-Soto, D. R. Gonçalves, S. Akas, A. Cortesi, S. Daflon, et al. XLI Reunión Anual da Sociedade Astronômica Brasileira 2017, 2018, São Paulo, Brazil. Boletim da Sociedade Astronômica Brasileira, 30, no. 1, 158-159. **Poster Presenter**.
 15. *Identifying Galactic halo PN candidates in the imaging surveys: J-PLUS/S-PLUS and J-PAS*.
L. Gutiérrez-Soto, D. R. Gonçalves, S. Akas, A. Cortesi, A. Ederoclite, et al., Latin American Regional IAU Meeting (LARIM) Cartagena 2016, Cartagena de Indias, Colombia. *Rev. Mex. Astron. Astrofís. (Serie de Conferencias)*. **Poster Presenter**.

16. *A catalog of stationary bow shocks in the Orion Nebula.*
L. A. Gutiérrez-Soto, W. J. Henney, J. A. Tarango-Yong, OSSF14: The Olympian Symposium on Star Formation, 2014, Paralia Katerini, Greece. **Poster Presenter.**

PARTICIPATION IN OTHER EVENTS

1. 3rd J-PLUS Virtual Meeting. 2020, Teruel, España.
2. 12th J-PAS Collaboration Meeting. 2016, Río de Janeiro, Brasil.
3. Frontiers in Contemporary Astrophysics. 2013, Morelia, México.
4. Noveno encuentro colombiano de matemática educativa. 2008, Valledupar, Colombia.

FINANCIAL SUBSIDIES

**Consejo Nacional de Investigaciones Científicas
y Técnicas, CONICET.** 2022
Postdoctoral Fellowship

**Fundação de Amparo à Pesquisa do Estado
de São Paulo, FAPESP.** 2020
Postdoctoral Fellowship

**Coordenação de Aperfeiçoamento de Pessoal
de Nível Superior, CAPES.** 2015
Doctoral Studies Fellowship

**Dirección General de Asuntos del Personal
Académico, DGAPA.** 2013
Master's Studies Fellowship

**Departamento Administrativo de Ciencia,
Tecnología e Innovación, COLCIENCIAS.** 2010
Research Stay Fellowship