

# Santiago del Palacio

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## Academic Formation

2014–2018 **PhD in Astronomy**, *Faculty of Astronomical and Geophysical Sciences, La Plata National University*, La Plata, *Thesis defense mark: 10/10.*

Completion date: Nov. 20, 2018

2008–2014 **Ms. S. in Astronomy**, *Faculty of Astronomical and Geophysical Sciences, La Plata National University*, La Plata, *GPA: 9.56/10.*

## PhD Courses

- 1. Massive Stars in the Modern Astronomical Era**  
Professor: Dr. Michäel De Becker  
Faculty of Astronomical and Geophysical Sciences, La Plata National University  
Year: 2017      Mark: 10/10
- 2. Seminar of Radioastronomy**  
Professors: Dr. Paula Benaglia & Dr. Manuel Fernández López  
Faculty of Astronomical and Geophysical Sciences, La Plata National University  
Year: 2015      Mark: 10/10
- 3. Introduction to black hole astrophysics.**  
Professor: Dr. Gustavo Romero.  
Year: 2015      Attended
- 4. Introduction to Magnetohydrodynamics.**  
Professor: Dr. Ana María Platzeck.  
Year: 2014      Mark: 10/10
- 5. Seminar: Applications of GRTensor in Astrophysics and Cosmology.**  
Professor: Dr. Santiago Pérez-Bergliaffa.  
Year: 2014      Mark: 10/10
- 6. Introduction to X-Ray Astronomy.**  
Professor: Dr. Jorge Combi.  
Year: 2014      Mark: 10/10
- 7. Seminar: High-Energy Processes in Sources with Relativistic Outflows.**  
Professor: Dr. Valentí Bosch-Ramon.  
Year: 2013      Mark: 8/10

## Research visits

- Sep–Nov 2019 **University of Southampton**, *Host: Dr. Diego Altamirano.*  
Jun–Jul 2018 **University of Barcelona**, *Host: Dr. Valentí Bosch-Ramon.*  
Jun–Jul 2016 **University of Barcelona**, *Host: Dr. Valentí Bosch-Ramon.*

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## Fellowships

- 2019–Present **Postdoctoral CONICET Research Fellow (National Research Council)**, *Topic: Conditions for the generation of  $\gamma$ -ray emission in massive binaries*, Supervisor: Dr. Romero, Gustavo E.
- 2014–2019 **PhD CONICET Research Fellow (National Research Council)**, *Topic: Investigation of non-thermal processes in the vicinities of massive stars*, Advisor: Dr. Bosch-Ramon, Valentí, Co-advisor: Dr. Romero, Gustavo E.
- 2013–2014 **CIC training fellowship for university students**, Supervisor: Dr. Combi, Jorge.
- 2012–2013 **CIN fellowship for stimulating scientific vocation**, Advisor: Dr. Bosch-Ramon, Valentí, Co-advisor: Dr. Romero, Gustavo E.

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## Awards

- 2020 *Carlos M. Varsavsky* award to the best PhD thesis in astronomy in the period 2018–2019 (Argentina).
- 2019 Fellowship from the COSPAR Capacity Building Fellowship Programme (ESA). Topic: research visit to the University of Southampton, UK. Amount: €570.
- 2015 Distinction to the best poster contribution in the I Annual Meeting of PhD Students of the Faculty of Astronomical and Geophysical Sciences (UNLP).
- 2014 Joaquín V. González Prize, Distinction awarded to students of the University of La Plata with the highest marks. La Plata City Council, Buenos Aires, Argentina.

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## Teaching Experience

### Graduate Experience

- 2020–Present **Head of Practical Assignments of Introduction to Relativistic Astrophysics and Introduction to Black Holes Astrophysics**, *Faculty of Astronomical and Geophysical Sciences, UNLP, La Plata.*
- 2016–2020 **Graduate Teaching Assistant of Introduction to Relativistic Astrophysics and Introduction to Black Holes Astrophysics**, *Faculty of Astronomical and Geophysical Sciences, UNLP, La Plata.*
- 2014–2020 **Graduate Teaching Assistant of Calculus**, *Faculty of Engineering, UNLP, La Plata.*
- 2015,2016 **Graduate Teaching Assistant of the Summer Entrance Course**, *Faculty of Exact Sciences, UNLP, La Plata.*

### Undergraduate Experience

- 2011–2014 **Teaching Assistant of the Summer Entrance Course**, *Faculty of Astronomical and Geophysical Sciences, UNLP, La Plata.*
- 2012–2014 **Teaching Assistant of Algebra**, *Faculty of Astronomical and Geophysical Sciences, UNLP, La Plata.*
- 2011–2012 **Teaching Assistant of Calculus**, *Faculty of Engineering, UNLP, La Plata.*
- 2011 **Teaching Assistant of Calculus**, *Faculty of Exact Sciences, UNLP, La Plata.*

## Teaching Formation

- 2017 **Seminar on Teaching Formation**, *Faculty of Exact Sciences, UNLP, La Plata*, duration: 12 h. Approved.
- 2015 **Graduate course: Geogebra didactic aspects for teaching basic science and engineering**, *Faculty of Engineering, UNLP, La Plata*, duration: 40 h. Mark: 10/10.
- 2014 **Workshop: Teaching and evaluation in university classrooms**, *Faculty of Astronomical and Geophysical Sciences, UNLP, La Plata*, duration: 12 h. Approved.

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## Observing Experience

### Approved Proposals

- 2021 **PI of Joint Chandra-NuSTAR Proposal**, *Evolution of the X-ray emission from the colliding-wind binary HD 93129A after its periastron passage*, Awarded Time: 60 ks with both instruments.
- 2020 **Co-I of ESA DS3 (Malargüe) + CLTC-CONAE (Neuquén) Proposal**, *Search for Periodic Radio Signals from the Gamma-ray Source Fermi J1913+0515 Associated to SS433*, Estimated time: 48 h.
- 2020 **Co-I of GMRT Proposal**, *Investigating particle acceleration associated with putative single Wolf-Rayet stars*, Awarded time: 18 h.
- 2019 **PI of XMM-Newton Proposal**, *Relativistic particle acceleration in the Wolf-Rayet bubble G2.4+1.4*, Awarded time: 58 ks.
- 2018 **Co-I of GMRT Proposal**, *Investigating the low-frequency radio emission in Wolf-Rayet Bubbles*, Awarded time: 16 h.
- 2017 **Co-I of JVLA Proposal**, *Mapping magnetic fields in the stellar bow shock EB27*, Awarded Time: 3 h.
- 2017 **PI of Joint Chandra-NuSTAR Proposal**, *A unique opportunity to observe the extreme massive binary HD 93129A near periastron passage*, Awarded Time: 50 ks with both instruments.
- 2017 **Co-I of VLBA Proposal**, *Is the emission from the wind-collision region of WR 146 polarized?*, Awarded Time: 12 h.
- 2016 **Co-I of XMM-Newton Proposal**, *The massive binary HD 93129A: an extreme wind-wind collision during AO16*, Awarded Time: 60 ks.
- 2016 **PI of JVLA Proposal**, *Search of synchrotron radiation in two interacting stellar bubbles (2nd part)*, Awarded Time: 1.33 h.
- 2016 **PI of JVLA Proposal**, *Search of synchrotron radiation in two interacting stellar bubbles*, Awarded Time: 3.23 h.
- 2016 **Co-I of GMRT Proposal**, *Testing the non-thermal radio emission from the putative gamma-ray source WR 11*, Awarded Time: 24 h.
- 2016 **Co-I of GMRT Proposal**, *Spatial Distribution and Variability of the Non-Thermal Emission Associated with Proplyd-like Objects Near the Cygnus OB2 Region*, Awarded Time: 14 h.

- 2015 **PI of JVLA Proposal**, *Is the radiation from the brightest colliding-wind binaries polarized?*, Awarded Time: 7.9 h.
- 2015 **PI of JVLA DDT Proposal**, *Is the Emission from the Wind-Collision Region of WR146 Polarized?*, Awarded Time: 1.0 h.

### Telegrams

- 2021 **Co-author of ATel #14806**, *A new Glitch in the Vela Pulsar (PSR B0833–45/PSR J0835–4510)*, PuMA Collaboration.
- 2019 **Co-author of ATel #12482**, *Radio observations following the recent glitch of Vela Pulsar (PSR B0833–45)*, PuMA Collaboration.
- 2018 **Corresponding author of ATel #12323**, *Follow up of the radio flare from the magnetar XTE J1810–197 at 1.4 GHz*, On behalf of the PuMA Collaboration.

## Participation in Scientific Meetings

### Talks

- 2020 **Varsavsky prize talk 2020: Non-thermal radiation associated to massive stars**, 62<sup>nd</sup> *Annual Meeting of the Argentinian Astronomical Association*.
- 2019 **X-ray view of the extreme colliding-wind binary HD 93129A during periastron**, *New Results in X-ray Astronomy 2019 (MSSL, UK)*.
- 2018 **Pulsar monitoring from the IAR observatory**, *Mini-course on gravitational waves (FCAGLP)*.
- 2018 **Non-thermal emission from stellar bow shocks**, *Massive stars and Supernovae (Nidia Fest)*.
- 2017 **Multi-frequency study of the massive binary HD 93129A**, *III Annual Meeting of PhD Students of the Faculty of Astronomical and Geophysical Sciences (UNLP)*.
- 2017 **High-Energy Astrophysics**, 5<sup>th</sup> *National Meeting of Astronomy Students*.
- 2017  **$\gamma$ -ray emission in blazars produced by interactions between BLR clouds and jet**, 60<sup>th</sup> *Annual Meeting of the Argentinian Astronomical Association*.
- 2015 **A model for the non-thermal emission of the very massive colliding-wind binary HD93129A**, 58<sup>th</sup> *Annual Meeting of the Argentinian Astronomical Association*.
- 2014 **Interactions of relativistic particles in stellar winds**, *II Argentinian-Brazilian Meeting on Gravitation, Astrophysics, and Cosmology*.
- 2013 **Equivocando las preguntas: Métodos actuales de evaluación**, 1<sup>st</sup> *National Meeting of Astronomy Students*.

### Posters

- 2021 **The high-energy emission from the massive colliding-wind binary HD 93129A near periastron**, *237th meeting of the American Astronomical Society*.
- 2016 **Non-thermal Processes in systems with relativistic jets**, *II Annual Meeting of PhD Students of the Faculty of Astronomical and Geophysical Sciences of the UNLP*.
- 2016 **Gamma-ray predictions for the very massive colliding-wind binary HD 93129A**, *6th International Symposium on High-Energy Gamma-Ray Astronomy (Gamma2016)*.

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 <http://garra.iar.unlp.edu.ar/people/santiago.html>

- 2015 **Relativistic particle content in the most massive colliding-wind binary in the Galaxy**, *High-Energy Phenomena in Relativistic Outflows V*.
- 2015 **Investigación de procesos no-térmicos en las cercanías de estrellas de gran masa**, *1 Annual Meeting of PhD Students of the Faculty of Astronomical and Geophysical Sciences of the UNLP*, awarded a distinction as the best poster contribution of the meeting.
- 2013 **Estudio de procesos radiativos de alta energía en sistemas binarios con estrellas de gran masa**, *56<sup>th</sup> Annual Meeting of the Argentinian Astronomical Association*.  
[Attendant](#)
- 2021 **International Cosmic Ray Conference 2021**, Berlin (virtual meeting).
- 2021 **European Astronomical Society Annual Meeting**, Leiden (virtual meeting).  
[Organization](#)
- 2014 **2<sup>nd</sup> National Meeting of Astronomy Students**, La Plata.

## Other Courses Attended

- 2017 **Workshop 'Latin American X-ray School for Different Astrophysical Scenarios: Data Analysis of the XMM-Newton, Chandra and NuSTAR missions'**, COSPAR, Viedma.
- 2012 **L<sup>A</sup>T<sub>E</sub>X Introduction to Academic Publications**, *Faculty of Astronomical and Geophysical Sciences, UNLP, La Plata*.
- 2010 **GNU/Linux Course for Students**, *Faculty of Astronomical and Geophysical Sciences, UNLP, La Plata*.

## Formation of human resources

- 2021 **Advisor of the M. Sc. Thesis in Physics of Javier Martínez (Co-advisor: Gustavo E. Romero)**, *Topic: Investigation of bow shocks from hyper velocity stars*, FCAGLP, UNLP, La Plata. Grade: 10/10.
- 2021 **Advisor of the M. Sc. Thesis in Astronomy of Agustina Blanco (Co-advisor: Paula Benaglia)**, *Topic: Radiointerferometric study of the colliding-wind binary WR 147*, Faculty of Astronomical and Geophysical Sciences, UNLP, La Plata. Grade: 10/10.
- 2020 **Advisor of the M. Sc. Thesis in Astronomy of Sofía Valentina Sosa Fiscella (Co-advisor: Luciano Combi)**, *Topic: High-precision timing study of the radio pulsar J0437-4715 using IAR antennas*, Faculty of Astronomical and Geophysical Sciences, UNLP, La Plata. Grade: 10/10.

## Outreach activities

- 2020 Interview for the VocAr program to promote scientific careers in Argentina, available in <https://www.conicet.gov.ar/programas/vocar/recursos-publicaciones-vocar/>, *Miradas de Ciencia - Astrónom@s*.
- 2020 Short communications with local media (radio and television) to talk about the Varsavsky Prize awarded for my research.

- 2019 Divulcation talk in a guided visit for students to the IAR observatory. Talk title: 'El rompecabezas astronómico'.
- 2018 Divulcation talk in a guided visit for students to the IAR observatory. Talk title: 'La astronomía más allá de las estrellas'.
- 2018 Participation as speaker in the Series of Talks 'Viernes en el Observatorio', FCAGLP. Talk title: 'La astronomía más allá de las estrellas'.
- 2016 Interview for the program 'Dos entre comillas', FM Meliquina 99.9
- 2015 Interview for the program 'Radiofotos', FM Universidad 107.5
- 2015 Text for astronomy outreach: 'Regiones de colisión de vientos estelares', published in Bol. 50 of the Argentinian Institute of Radioastronomy.

## Languages

- Spanish **Mothertongue**
- English **Intermediate-High**

## Publications

### Refereed papers in international journals

1. **A persistent ultraviolet outflow from the accretion disc in a transient neutron star binary**  
Castro Segura, N., Knigge, C., Long, K. S., Altamirano, D., et al.  
Submitted, 2021.
2. **Vela Pulsar: Single Pulses Analysis with Machine Learning Techniques**  
Lousto, C. O., Misseel, R., Prajapati, H., Sosa Fiscella, V., López Armengol, F. G., et al.  
Submitted, 2021.
3. **The non-thermal emission from the colliding-wind binary Apep**  
del Palacio, S., Benaglia, P., De Becker, M., Bosch-Ramon, V. & Romero, G. E.  
Submitted, 2021.
4. **Non-thermal emission from star-forming galaxies detected in gamma rays**  
Kornecki, P., Peretti, E., del Palacio, S., Benaglia, P. & Pellizza, L. J.  
Submitted, 2021.
5. **High-sensitivity polarimetric study of the stellar bow shock EB27**  
Benaglia, P., del Palacio, S., Hales, C., & Colazo, M. E.  
Monthly Notices of the Royal Astronomical Society, 503, 251, 2021.
6. **PSR J0437–4715: The Argentine Institute of Radioastronomy 2019–2020 Observational Campaign**  
Sosa Fiscella, V., del Palacio, S., Combi, L.; Lousto, C. O., et al.  
The Astrophysical Journal, 908, 158, 2021.
7. **Bow-shocks, nova shells, disc winds and tilted discs: The Nova-Like V341 Ara has it all**  
Castro Segura, N., Knigge, C., Acosta-Pulido, J. A.; Altamirano, D., del Palacio, S., et al.  
Monthly Notices of the Royal Astronomical Society, 501, 1951, 2021.
8. **New insights in the HII region G18.88–0.49: hub-filament system and accreting filaments**  
Dewangan, L. K., Ojha, D. K., Sharma, Saurabh, del Palacio, S., Bhadari, N. K., & Das, A.  
The Astrophysical Journal, 903, 13, 2020.
9. **The gamma-ray/infrared luminosity correlation of star-forming galaxies**

- Kornecki, P., Pellizza, L. J., del Palacio, S., Müller, A. L., et al.,  
Astronomy & Astrophysics, 641, 147, 2020.
10. **Probing the physical conditions and star formation processes in the Galactic HII region S305**  
Dewangan, L. K., Sharma, S., Pandey, R., del Palacio, S., Ojha, D. K., Benaglia, P., et al.  
The Astrophysical Journal, 898, 172, 2020.
  11. **The high-energy emission from HD 93129A near periastron**  
del Palacio, S., García, F., Altamirano, D., Barbá, R. H., Bosch-Ramon, V., Corcoran, M., et al.  
Monthly Notices of the Royal Astronomical Society, 494, 6043, 2020.
  12. **Upgraded antennas for pulsar observations in the Argentine Institute of Radio astronomy**  
Gancio, G., Lousto, C. O., Combi, L., del Palacio, S., Lopez Armengol, F. G., et al.  
Astronomy & Astrophysics, 633, 84, 2019.
  13. **Investigating Particle Acceleration in the Wolf-Rayet Bubble G2.4+1.4**  
Prajapati, P., Tej, A., del Palacio, S., Benaglia, P., et al.  
The Astrophysical Journal Letters, 884, 49, 2019.
  14. **A model for high-mass microquasar jets under the influence of a strong stellar wind**  
Molina, E., del Palacio, S., & Bosch-Ramon, V.  
Astronomy & Astrophysics, 629, 129, 2019.
  15. **Radio observations of evaporating objects in the Cygnus OB2 region**  
Isequilla, N. L., Fernández-López, M., Benaglia, P., Ishwara-Chandra, C. H., & del Palacio, S.  
Astronomy & Astrophysics, 627, 58, 2019.
  16. **Investigation of the WR 11 field at decimeter wavelengths**  
Benaglia, P., del Palacio, S., Ishwara-Chandra, C. H., De Becker, M., et al.  
Astronomy & Astrophysics, 625, 99, 2019.
  17. **Gamma rays from jets interacting with BLR clouds in blazars**  
del Palacio, S., Bosch-Ramon, & Romero, G. E.  
Astronomy & Astrophysics, 623, 101, 2019.
  18. **Multi-zone non-thermal radiative model for stellar bowshocks**  
del Palacio, S., Bosch-Ramon, V., Müller, A. L., & Romero, G. E.  
Astronomy & Astrophysics, 617, 13, 2018.
  19. **Gamma rays from clumpy wind-jet interactions in high-mass microquasars**  
de la Cita, V. M., del Palacio, S., Bosch-Ramon, V., Paredes-Fortuny, X., et al.  
Astronomy & Astrophysics, 604, 39, 2017.
  20. **Synchrotron radiation and absence of linear polarization in the colliding wind binary WR 146**  
Hales, C. A., Benaglia, P., del Palacio, S., Romero, G. E., & Koribalski, B. S.  
Astronomy & Astrophysics, 598, 42, 2017.
  21. **A model for the non-thermal emission of the very massive colliding-wind binary HD 93129A**  
del Palacio, S., Bosch-Ramon, V., Romero, G. E., & Benaglia, P.  
Astronomy & Astrophysics, 591,139, 2016.
  22. **Gamma-ray binaries beyond one-zone models: an application to LS 5039**  
del Palacio, S., Bosch-Ramon, V., & Romero, G. E.  
Astronomy & Astrophysics, 575,112, 2015.

Refereed papers in international journals (non-astronomical)

1. **Comparative Study of 10 X-STR Markers in Populations of Northeast Argentina**  
Di Santo Meztler, G. P., Glesmann, L. A., Esteban, M. E., del Palacio, S., et al.  
Human Biology, 91:1-12, 2019.

2. **Genetic differentiation of North-east Argentina populations based on 30 binary X-chromosome markers**

Di Santo Meztler, G. P., del Palacio, S., Esteban, M. E., Armoa, I., et al.  
Frontiers in Genetics, 9, 208, 2018.

[Complete papers in international proceedings](#)

1. **A multi-wavelength view of the cosmic ray confinement in star-forming galaxies**

Kornecki, P., Peretti, E., del Palacio, S., Benaglia, P., Pellizza, L. J., & Romero, G. E.  
Proceedings of ICRC, 2021.

2. **Contribution due to inhomogeneous winds to the gamma-ray emission in microquasar jets**

de la Cita, V. M., del Palacio, S., Bosch-Ramon, V., Paredes-Fortuny, X., Romero, G. E., & Khangulyan, D.  
Proceedings of Gamma2016, 2017.

3. **Gamma-ray predictions for the very massive colliding-wind binary HD 93129A**

del Palacio, S., Bosch-Ramon, V., Romero, G. E., & Benaglia, P.  
Proceedings of Gamma2016, 2017.

4. **Relativistic particle content in the most massive colliding-wind binary in the Galaxy**

del Palacio, S., Bosch-Ramon, V., Romero, G. E., & Benaglia, P.  
Proceedings of HEPRO V, 2015.

5. **Interactions of relativistic particles in stellar winds**

del Palacio, S., Bosch-Ramon, V., & Romero, G. E.  
Proceedings of Second Argentinian-Brazilian Meeting on Gravitation, Astrophysics, and Cosmology, 2014.

[Complete papers in national proceedings](#)

1. **Non-thermal processes in the bow shocks of hyper-velocity stars**

Martínez, J. R., del Palacio, S., & Romero, G. E.  
Bol. Asoc. Arg. Astron., 62, 274, 2021.

2. **Estudio de alta precisión del púlsar J0437–4715 desde el Instituto Argentino de Radioastronomía**

Sosa Fiscella, V., del Palacio, S., Combi, L., Lousto, C. O., et al.  
Bol. Asoc. Arg. Astron., 62, 268, 2021.

3. **Non-thermal radiation associated with massive stars**

del Palacio, S., Bosch-Ramon, V., & Romero, G. E.  
Bol. Asoc. Arg. Astron., 62, 246, 2021.

4. **Towards a radio-polarimetric study of the bright colliding-wind binary WR 147**

Blanco, A., Benaglia, P., del Palacio, S., & Hales, C. A.  
Bol. Asoc. Arg. Astron., 61, 66, 2020.

5. **Gamma-ray emission from interactions between jets and BLR clouds**

del Palacio, S., Bosch-Ramon, V., & Romero, G. E.  
Bol. Asoc. Arg. Astron., 60, 92, 2018.

6. **A model for the non-thermal emission of the very massive colliding-wind binary HD93129A**

del Palacio, S., Bosch-Ramon, V., Romero, G. E., & Benaglia, P.  
Bol. Asoc. Arg. Astron., 58, 225, 2016.

7. **High-Energy Radiative Processes in High-Mass Binary Systems**

del Palacio, S., Bosch-Ramon, V., & Romero, G. E.



Bol. Asoc. Arg. Astron. 56, 355, 2013.

## Institutional Participation

- 2015–2018 Graduate member of the Astronomy Curriculum Reform Commission of the Faculty of Astronomical and Geophysical Sciences of La Plata.
- 2017 Graduate member of the Advisory Committee for selecting a graduate teaching assistant for Calculus, Faculty of Engineering of La Plata. File 300-9203/16.
- 2011 Student member of the Advisory Committee for selecting the student teaching assistant for General Astronomy, Faculty of Astronomical and Geophysical Sciences of La Plata. File 1100-1387.

## Participation in Research Groups and Scientific Associations

- 2017–Present Member of the group *Pulsar Monitoring in Argentina (PuMA)*.
- 2015–Present Professional partner of the *Asociación Argentina de Astronomía (AAA)*.
- 2015–Present Member of the group *Grupo de Astrofísica Relativista y Radioastronomía (GARRA)*.

## Contact references

- |                         |                                |                                 |
|-------------------------|--------------------------------|---------------------------------|
| (Former PhD advisor)    | <b>Dr. Valentí Bosch-Ramon</b> | <i>vbosch@fqa.ub.edu</i>        |
| (Former PhD co-advisor) | <b>Dr. Gustavo E. Romero</b>   | <i>romero@iar.unlp.edu.ar</i>   |
|                         | <b>Dr. Paula Benaglia</b>      | <i>paula@iar.unlp.edu.ar</i>    |
|                         | <b>Dr. Diego Altamirano</b>    | <i>d.altamirano@soton.ac.uk</i> |