

Andrés Nicolás Ruiz

Curriculum Vitae

Personal Information

BORN December 13, 1984. Córdoba, Argentina
ADDRESS Instituto de Astronomía Teórica y Experimental (IATE)
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Education

2008 - 2013 **Ph.D. in Astronomy.** FAMAF, Universidad Nacional de Córdoba, Argentina. Advisor: Dr. Mariano Javier Domínguez
2002 - 2008 **Licenciado Degree in Astronomy.** FAMAF, Universidad Nacional de Córdoba, Argentina. Advisor: Dr. Mariano Javier Domínguez.

Positions

FROM 2019 **Adjoint Researcher** at Instituto de Astronomía Teórica y Experimental, Córdoba, Argentina. Funded by CONICET.
2016 - 2019 **Assistant Researcher** at Instituto de Astronomía Teórica y Experimental, Córdoba, Argentina. Funded by CONICET. Advisor: Dr. Diego García Lambas. Co-Advisor: Dr. Manuel E. Merchán
2013 - 2015 **Postdoc** at Instituto de Astronomía Teórica y Experimental, Córdoba, Argentina. Funded by CONICET. Advisor: Dr. Nelson D. Padilla. Co-Advisor: Dra. Sofía A. Cora

Teaching

FROM 2017 **Adjoint Profesor** at Observatorio Astronómico, Universidad Nacional de Córdoba, Argentina.
2012 - 2017 **Assistant Profesor** at Observatorio Astronómico, Universidad Nacional de Córdoba, Argentina.
2011 - 2015 **Astronomy Workshop.** Extra-curricular activity at Colegio Nacional de Monserrat, Universidad Nacional de Córdoba, Argentina.
2006 - 2008 **Teaching Assistant** at FAMAF, Universidad Nacional de Córdoba, Argentina.

Supervision of students and postdocs

FROM 2025 **Co-supervision of Lic. Franco Maximiliano Caporaso.** PhD fellow funded by CONICET.
FROM 2025 **Supervision of Lic. Federico Bustillos Rava.** PhD fellow funded by CONICET.
FROM 2024 **Supervision of Dr. Ignacio Germán Alfaro.** Postdoctoral fellow funded by CONICET.
FROM 2022 **Supervision of Dr. Federico Dávila-Kurbán.** Postdoctoral fellow funded by CONICET.
2021 - 2023 **Co-supervision of Lic. Ignacio Germán Alfaro.** PhD fellow funded by CONICET.
2018 - 2023 **Supervision of Lic. Ignacio Germán Alfaro.** PhD degree in Astronomy at FAMAF, Universidad Nacional de Córdoba, Argentina.
2021 - 2022 **Co-supervision of Dr. Carlos Mauricio Correa.** Postdoctoral fellow funded by CONICET.

Refereed Publications

I have published 50 refereed articles in leading international peer-reviewed journals since 2011. Listed below are those where I am main author/co-author, for the complete list you can see my [ADS author list](#).

19. **Evolution mapping II: describing statistics of the non-linear cosmic velocity field.**
Esposito M., Sánchez A. G., Bel J. & Ruiz A. N.
2024, Monthly Notices of the Royal Astronomical Society, vol. 534, pp. 3906-3915.
18. **Void Probability Function inside cosmic voids: evidence for hierarchical scaling of high-order correlations in real space.**
Dávila-Kurbán F., Ruiz A. N., Paz D. J. & Garcia Lambas D.
2024, Monthly Notices of the Royal Astronomical Society, vol. 527, pp. 10469-10479.
17. **Backsplash galaxies and their impact on galaxy evolution: a three-stage, four-type perspective.**
Ruiz A. N., Martínez H. J., Coenda V., Muriel H., Cora S. A., de los Rios M. & Vega-Martínez C. A.
2023, Monthly Notices of the Royal Astronomical Society, vol. 525, pp. 3048-3060.
16. **Guess the cheese flavor by sizing its holes: A cosmological test using the abundance of Popcorn voids.**
Paz D. J., Correa C. M., Gualpa S., Ruiz A. N., Bederian C., Graña D. & Padilla N. D.
2023, Monthly Notices of the Royal Astronomical Society, vol. 522, pp. 2553-2569.
15. **How do galaxies populate halos in extreme density environments? An analysis of the halo Occupation Distribution in SDSS.**
Alfaro G. I., Rodriguez F., Ruiz A. N., Luparello H. E. & Garcia Lambas D.
2022, Astronomy & Astrophysics, vol. 665, id. A44 (9 pp.)
14. **Evolution mapping: a new approach to describe matter clustering in the non-linear regime.**
Sánchez A. G., Ruiz A. N., Gonzalez jara J. & Padilla N. D.
2022, Monthly Notices of the Royal Astronomical Society, vol. 516, pp. 5673-5685.
13. **Galaxy populations in haloes in high-density environments.**
Alfaro I. G., Ruiz A. N., Luparello H. E., Rodriguez F., & Garcia Lambas D.
2021, Astronomy & Astrophysics, vol. 654, id. A62 (11 pp.)
12. **Redshift-space effects in voids and their impact on cosmological tests. Part I: the void size function.**
Correa C. M., Paz D. J., Sánchez A. G., Ruiz A. N., Padilla N. D. & Angulo R. E.
2021, Monthly Notices of the Royal Astronomical Society, vol. 500, pp. 911-925.
11. **How galaxies populate haloes in very low-density environments? An analysis of the Halo Occupation Distribution in cosmic voids.**
Alfaro I. G., Rodriguez F., Ruiz A. N., & Garcia Lambas D.
2020, Astronomy & Astrophysics, vol. 638, id. A60 (12 pp.)
10. **Non-fiducial cosmological test from geometrical and dynamical distortions around voids.**
Correa C. M., Paz D. J., Padilla N. D., Ruiz A. N., Angulo R. E. & Sánchez A. G.
2019, Monthly Notices of the Royal Astronomical Society, vol. 485, pp. 5761-5772.
9. **Structure and dynamics in low density regions: galaxy-galaxy correlations inside cosmic voids.**
Ruiz A. N., Alfaro I. G. & Garcia Lambas, D.
2019, Monthly Notices of the Royal Astronomical Society, vol. 483, pp. 4070-4079.
8. **Semi-Analytic Galaxies - I. Synthesis of environmental and star-forming regulation mechanisms.**
Cora S. A., Vega-Martínez C. A., Hough T., Ruiz A. N., Orsi A., Collacchioni F., Mñoiz Arancibia A. M., Gargiulo I. D., Padilla N. D., Gottlöber S. & Yepes G.
2018, Monthly Notices of the Royal Astronomical Society, vol. 479, pp. 2-24.

7. **Voids and Superstructures: correlations and induced large-scale velocity flows.**
Lares M., Luparello H. E., Maldonado V., Ruiz A. N., Paz D. J., Ceccarelli L. & Garcia Lambas D.
2017, Monthly Notices of the Royal Astronomical Society, vol. 470, pp. 85-94.
6. **The sparkling Universe: clustering of voids and void clumps.**
Lares M., Ruiz A. N., Luparello H. E., Ceccarelli L., Garcia Lambas D. & Paz D. J.
2017, Monthly Notices of the Royal Astronomical Society, vol. 468, pp. 4822-4830.
5. **The sparkling Universe: a scenario for cosmic void motions.**
Ceccarelli L., Ruiz A. N., Lares M., Paz D. J., Maldonado V. E. Luparello H. E. & Garcia Lambas D.
2016, Monthly Notices of the Royal Astronomical Society, vol. 461, pp. 4013-4021.
4. **The sparkling Universe: the coherent motions of cosmic voids.**
Garcia Lambas D., Lares M., Ceccarelli L., Ruiz A. N., Paz D. J., Maldonado V. E. & Luparello H. E.
2016, Monthly Notices of the Royal Astronomical Society, vol. 455, pp. L99-L103.
3. **Calibration of semi-analytic models of galaxy formation using Particle Swarm Optimization.**
Ruiz A. N., Cora S. A., Padilla N. D., Domínguez M. J., Vega-Martinez C. A., Tecce T. E., Orsi A., Yaryura Y., García Lambas D., Gargiulo I. D. & Muñoz Arancibia A. M.
2015, The Astrophysical Journal, vol. 801, pp. 139-149.
2. **Clues on void evolution - III. Structure and dynamics in void shells.**
Ruiz A. N., Paz D. J., Lares M., Luparello H. E., Ceccarelli L. & García Lambas D.
2015, Monthly Notices of the Royal Astronomical Society, vol. 448, pp. 1471-1482.
1. **How accurate is it to update the cosmology of your halo catalogues?.**
Ruiz A. N., Padilla N. D., Dominguez M. J. & Cora S. A.
2011, Monthly Notices of the Royal Astronomical Society, vol. 418, pp. 2422-2434.

Conferences

I have participated in more than 30 national and international conferences, meetings and workshops held in several institutes, contributing with talks, posters and proceedings.

Grants

- 2024 **SECYT-UNC Grant.** Title: La influencia de los vacíos cósmicos en la formación de galaxias: sesgos en la distribución galáctica y su efecto en tests cosmológicos. Code: 33620230100411CB.. Duration: 2 years. Co-director. (Director: Dr. Dante Javier Paz)
- 2022 **Programa de Modernización Tecnológica.** SECYT-UNC. Title: Procesamiento y análisis de grandes volúmenes de datos. Código: PMT 33520210100015CB. Director.
- 2018 **SECYT-UNC Grant.** Title: Estadística y dinámica de estructuras en gran escala del Universo. Code: PID 33620180101077. Duration: 3 years. Director.
- 2017 **FONCYT-CONICET Grant.** Title: Estudio estadístico de las estructuras en gran escala del Universo y su influencia en la formación y dinámica de las galaxias. Code: PICT 2016-1975. Duration: 2 years. Director
- 2016 **SECYT-UNC Grant.** Title: Estadística y dinámica de asociaciones de galaxias y estructuras en gran escala. Code: PID 30720450100484. Duration: 2 years. Co-director. (Director: Dr. Dante Javier Paz)
- 2014 **SECYT-UNC Grant.** Title: Estadística y dinámica de asociaciones de galaxias y estructuras en gran escala. Code: PID 30820130100347. Duration: 2 years. Co-director. (Director: Dr. Dante Javier Paz)

Temporary Stays

- 2024 **Max-Planck-Institut für extraterrestrische Physik.** Garching, Germany. LACEGAL Program. July 1 to October 30.
- 2022 **Max-Planck-Institut für extraterrestrische Physik.** Garching, Germany. LACEGAL Program. July 1 to September 30.

- 2019 **Max-Planck-Institut für extraterrestrische Physik.** Garching, Germany. LACEGAL Program. April 15 to July 31.
- 2018 **Max-Planck-Institut für extraterrestrische Physik.** Garching, Germany. LACEGAL Program. July 4 to August 7.
- 2014 **Max-Planck-Institut für Astrophysik.** Garching, Germany. LACEGAL Program. January 10 to March 10.
- 2011 **Instituto de Astrofísica de La Plata.** Facultad de Ciencias Astronómicas y Geofísicas, La Plata, Argentina. Invited by Dra. Sofía Alejandra Cora. October 25 to November 4.
- 2010 **Departamento de Astronomía y Astrofísica.** Pontificia Universidad Católica, Santiago, Chile. Assitant researcher invited by Dr. Nelson David Padilla, FONDAF 15010003. August 1 to January 31, 2011.
- 2009 **Centro de Estudios Científicos del Sur (CECS).** Valdivia, Chile. Invited by Dr. Fabrizio Canfora. June 8-22.

Evaluation

- 2025 **Member of Evaluation Committee.** Degree in Computer Sciences of Franco Diego Giménez. (Advisors: Dra. Nadia Luczywo and Dr. Juan Bautista Cabral). FAMAF, Universidad Nacional de Córdoba.
- 2024 **Member of Evaluation Committee.** Degree in Physics of Franco Maximiliano Caporaso. (Advisor: Dra. Elizabeth González). FAMAF, Universidad Nacional de Córdoba.
- 2023 **Member of Evaluation Committee.** PhD Thesis in Astronomy of Lic. Carolina Villalón. (Advisor: Dr. Diego Garcia Lambas). FAMAF, Universidad Nacional de Córdoba.
Member of Evaluation Committee. Degree in Astronomy of Candela Cerdosino. (Advisor: Dra. Ana Laura O'Mill). FAMAF, Universidad Nacional de Córdoba.
Member of Evaluation Committee. Magister in Administration of María Antonela Alvarez. (Advisor: Mgt. Nadia Ayelén Luczywo). Universidad Blas Pascal, Córdoba.
- 2022 **Member of Evaluation Committee.** Degree in Astronomy of Patricio Colazo. (Advisor: Dra. Heliana E. Luparello). FAMAF, Universidad Nacional de Córdoba.
- 2020 **Member of Evaluation Committee.** PhD Thesis in Astronomy of Lic. Carolina Charalambous (Advisor: Dr. Cristian Beaugé). FAMAF, Universidad Nacional de Córdoba.
Member of Evaluation Committee. Degree in Astronomy of Agustín Rodríguez Medrano. (Advisors: Dr. Dante Javier Paz and Dr. Federico Stasyszyn). FAMAF, Universidad Nacional de Córdoba.
- 2019 **Member of Evaluation Committee.** Degree in Astronomy of Ingrid Vanessa Daza Perilla (Advisor: Dr. Ariel Zandivarez). FAMAF, Universidad Nacional de Córdoba.
Member of Evaluation Committee. Degree in Astronomy of Abril Sahade (Advisor: Dr. Mariana Ceccere). FAMAF, Universidad Nacional de Córdoba.
- 2018 **Member of Evaluation Committee.** Degree in Astronomy of Agustín Rost (Advisor: Dr. Federico Stasyszyn). FAMAF, Universidad Nacional de Córdoba.
- 2017 **Gemini National Time Allocation Committee (NTAC).** Reviewer of proposals for 2017B and 2018A semesters.

Fellowships

- 2013 - 2015 **Postdoctoral Fellowship.** Consejo Nacional de Investigaciones Científicas y Técnicas. Advisors: Dr. Nelson David Padilla and Dra. Sofía Alejandra Cora
- 2011 - 2013 **Ph.D. Fellowship Tipo II.** Consejo Nacional de Investigaciones Científicas y Técnicas. Advisor: Dr. Mariano Javier Domínguez.
- 2008 - 2011 **Ph.D. Fellowship Tipo I.** Consejo Nacional de Investigaciones Científicas y Técnicas. Advisor: Dr. Mariano Javier Domínguez.

Reviewing activities

Referee for Monthly Notices of the Royal Astronomical Society, The Astrophysical Journal, Publications of the Astronomical Society of Australia and Astronomy & Computing.