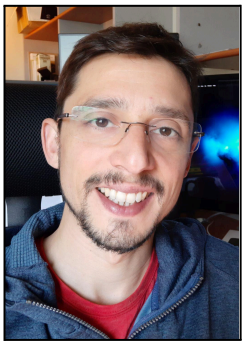
Carlos Gonzalo Díaz (PhD)



Professional Scientist in Astronomy and Astrophysics

- 18 yrs of science research
- 9 yrs of teaching higher education
- 3 yrs of astronomical equipment operations
- Bilingual (Spanish, English)

CONTACT:

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Work address: Astronomical Observatory of Córdoba - National University of Córdoba
Laprida 854, CP 5000, Córdoba Capital, Province of Córdoba, Argentina

Phones: Observatory: (+54) 351 433 1063

Website: https://gonza-portfolio.vercel.app/

CURRENT POSITION AND AFFILIATION:

Associate Researcher, "Consejo Nacional de Investigaciones Científicas y Técnicas" (CONICET)

EDUCATION:

2010 - 2015
Swinburne University of Technology
Hawthorn, 3122, VIC, Australia

DOCTOR (PhD) IN ASTROPHYSICS
Thesis in Extragalactic Astrophysics.
Key words: Intergalactic medium, galaxies, reionization epoch of the Universe. Experience with large size telescopes (8 and 10 meters).

2003 - 2009
National University of San Juan
Faculty of Exact, Physical and Natural Sciences
José Ignacio de la Roza 590 (oeste), Rivadavia, 5400, San Juan, Argentina

DEGREE IN ASTRONOMY (BSc+MSc)
Thesis on the use of the Fourier Transform for measuring stellar rotation speed.
Keywords: Stellar rotation, high resolution spectroscopy. Experience with medium size telescopes (2 meters).

POSTDOCTORAL TRAINING:

2017 - 2020
Gemini Observatory
La Serena, Chile

Gemini Science Fellow
Keywords: Instrumentation, optical and infrared systems, complex scientific operations.

2015 - 2016
Institute of Astronomical, Earth and Space Sciences - CONICET
San Juan, Argentina

CONICET Postdoctoral grant. Title: 'Chemical enrichment and reionization of the intergalactic medium'
Key words: Intergalactic medium, galaxies, reionization epoch of the Universe.

2015
Swinburne University of Technology
Hawthorn, Australia

Summer Postdoc. Title:'The comoving mass density of CIV at redshift > 5'
Key words: Intergalactic medium, galaxies, reionization epoch of the Universe.

LANGUAGES:

- ENGLISH. **Expert** in the use of the four skills: reading, writing, speaking and listening. **Professional** level of interpretation and production of content, both written and oral.
- ENGLISH. Approval of the Test of English as a Foreign Language (TOEFL). August 2009.

PROFESSIONAL EXPERTISE:

Data Acquisition: Experience in all modes of optical and infrared astronomical observations, including MOS, IFS, and adaptive optics. Experience in observations of all types of astronomical objects, including point-sources, extended sources, and non-sideral objects.

Data Analysis: Expert user of astronomical image analysis software: IRAF, DS9, SExtractor, VOtools, among others.
Skilled user of: Python, Fortran, bash and Git.

Communication: Professional speaker. Extensive participation in conferences and science outreach events. Highly skilled user of the LaTeX text composition system. Multiple scientific publications.

Organization and planning: Experience in planning and conducting scientific projects since 2006, and astronomical instrumentation projects since 2017.
Planning and execution of scientific operations with 8 and 10 meter telescopes, in optical and infrared, in all observation modes.

PROFESSIONAL SKILLS:

Initiative: Proactive. I have initiated research collaborations on many occasions since very early in my career.

Leadership: Responsible and charismatic. Skilled coordinator of teams with defined objectives, including research activities, scientific meetings, teaching and outreach.

Teamwork: Participatory and expressive. Easy integration into work teams. I can lead activities coordinated by others and maintain fluid communication with the team. I have participated in several committees, including organization of scientific events and evaluation of scientific projects and productions.

ASTRONOMICAL EQUIPMENT EXPERIENCE:

Infrared astronomical instrumentation
2018 - 2019

Gemini Observatory, La Serena, Chile
Scientific support of the Flamingos-2 infrared spectrograph, seven conditioning procedures for scientific operations ('back to sky').
Reference: Dr. Díaz, R. J. - ruben.diaz@noirlab.edu

Scientific astronomical observation operations
07/2017 - 07/2020

Gemini Observatory, La Serena, Chile
Member of the night scientific operations team. Acquisition of astronomical observations with GMOS and Flamingos-2 cameras in all their imaging and spectroscopy modes.
References: Dr. Rutten, R. - rene.rutten@noirlab.edu

RESEARCH EXPERIENCE:

Associate Researcher CIC - CONICET 11/2023 - **Current**	**Astronomical Observatory of Córdoba, UNC,** Córdoba Argentina. **Interstellar Medium and Galaxies.** Reionization of the Universe. Extragalactic HII regions and massive stars. References: Dr. Ahumada, Andrea -andrea.ahumada@unc.edu.ar Dr. Mast, Damián -damianmast@unc.edu.ar
Assistant Researcher CIC - CONICET 10/2022 - 10/2023	**Astronomical Observatory of Córdoba, UNC,** Córdoba Argentina. **Interstellar Medium and Galaxies**. Reionization of the Universe. Extragalactic HII regions and massive stars. References: Dr. Ahumada, Andrea -andrea.ahumada@unc.edu.ar Dr. Mast, Damián -damianmast@unc.edu.ar
Assistant Researcher CIC - CONICET 03/2016 - 09/2022	**Institute of Astronomical, Earth and Space Sciences (ICATE), CONICET,**San Juan, Argentina. **Extragalactic Astronomy.** Galaxies, circum-galactic medium and intergalactic medium. Chemical enrichment and reionization of the Universe. Reference: Dr. Donoso, Emilio -edonoso@icate-conicet.gob.ar
Postdoc CONICET 06/2015 - 02/2016	**Institute of Astronomical, Earth and Space Sciences (ICATE), CONICET,** San Juan, Argentina. **Extragalactic Astronomy.** Galaxies and the intergalactic medium. Chemical enrichment and reionization of the Universe. Reference: Dr. Donoso, Emilio -edonoso@icate-conicet.gob.ar
Postdoc 02/2015 - 04/2015	**Centre for Astrophysics and Supercomputing, Swinburne University of Technology,** VIC, Australia. **Extragalactic Astronomy.** The intergalactic medium. Chemical enrichment of the Universe. Reference: Dra. Ryan-Weber, Emma - eryanweber@swin.edu.au
Doctorate 2010 - 2015	**Centre for Astrophysics and Supercomputing, Swinburne University of Technology,** VIC, Australia. **Extragalactic Astronomy.** The intergalactic medium and the first galaxies. Chemical enrichment and reionization of the Universe. Reference: Dra. Ryan-Weber, Emma - eryanweber@swin.edu.au
Degree 2007 - 2009	**Department of Geophysics and Astronomy, UNSJ,**San Juan, Argentina. **Stellar Astrophysics.** Implementation of techniques based on the Fourier transform in the measurement of the projected axial rotation speed of stars, using Echelle spectroscopy. Reference: Dr. Gonzalez, J. F. - jfgonzalez@conicet.gov.ar
Undergraduate scholarship 2006 - 2007	**Department of Geophysics and Astronomy, UNSJ,** San Juan, Argentina. **Planetary Sciences.** Dynamics and physics of asteroids in cometary orbits. Numerical analysis of collisional processes. Reference: Dr. Gil-Hutton, Ricardo -

TEACHING EXPERIENCE:

Course: "Astronomy with the Gemini Observatory" 6 hours, 2016.	**Department of Geophysics and Astronomy, UNSJ.** Astronomy course on the instruments available in the Gemini Observatory telescopes.
1st category Assistant Teacher Chair: Physics I, 2016.	**Department of Geophysics and Astronomy, UNSJ.** In charge of the practical classes of the chair.
Enrolled teacher Chair: Epistemology and Research Methodology, 2016.	**Department of Geophysics and Astronomy, UNSJ.** Participation in theoretical-practical classes of the chair. Guide for Astronomy students in the development of thesis drafts.
Project supervisor Swinburne Astronomy Online, 2010 - 2012.	**Swinburne University of Technology.** Guide for Master's (MSc) students in bibliographic research projects.
2nd category auxiliary assistant. Chair: Physics I, 2005 - 2009	**Department of Geophysics and Astronomy, UNSJ.** In charge of the teaching support classes and assisting students in laboratory practices.
Student Tutor Second year of the Bachelor's degree in Astronomy, 2009.	**Tutoring Service. Faculty of Exact, Physical and Natural Sciences. UNSJ.** Monitoring, guidance and support in the academic progress of students of the Bachelor of Astronomy.
2nd category auxiliary assistant. Chair: Algebra, 2008	**Department of Geophysics and Astronomy, UNSJ.** In charge of support classes and the computer laboratory.
Enrolled student Chair: Physics I, 2004	**Department of Geophysics and Astronomy, UNSJ.** Support classes and laboratory practices.

ORGANIZATION OF SCIENTIFIC EVENTS

- Local Organizing Committee of the international conference "Distant Galaxies from the far south", Bariloche, Argentina, December **2017**. (www.astro.rug.nl/~galpatagonia/)
- Local Organizing Committee of the "59th Annual Meeting of the Argentine Astronomy Association", San Juan, Argentina, September **2016**.

EVALUATION COMMITTEES

- **Coordinator** of the National Time Allocation Committee (**NTAC**) of Argentina, for the Gemini Observatory. Semester **2024B**.
- **Member** of the National Time Allocation Committee (**NTAC**) of Argentina, for the Gemini Observatory. Semesters **2017B**, **2022A**, and **2022B**.
- **Reviewer (referee)** of articles in peer-reviewed scientific journals since **2019**.
- **Thesis evaluator**, **2017**, San Juan National University, Argentina.

GRANTS AND SCHOLARSHIPS

- “Proyecto de Investigación Científica y Tecnológica” (PICT), for “Newly formed research group”, 2023 - 2026: “The Starburst-AGN connection”. (PICT-2021-GRF-TII- 00442).
- “Proyectos de Investigación Plurianual” (PIP), 2023 - 2025: “The Starburst-AGN connection”. (PIP 11220210100520CO)
- PUE (“Proyecto de Unidades Ejecutoras”), 2019 - 2023: “Astronomy with large databases”. Collaborator Group.
- Internal Postdoctoral Reintegration Scholarship, 2015, 2016.
- Victorian International Research Scholarship, 2010 - 2014.
- Swinburne University Postgraduate Research Award, 2010.
- Internal Research and Creation Scholarship. Category: Advanced Students, 2006.
- Scholarship from the El Leoncito Astronomical Complex (CASLEO), 2006.

AWARDS

- 2010 - Medal and Diploma of Honor of the National University of San Juan, for the highest grade point average (9.83/10).
- 2007 / 2008 - Standard Bearer of the Faculty of Exact, Physical and Natural Sciences, National University of San Juan.

SCIENCE OUTREACH CONTRIBUTIONS

- Coordinator of the “Scientific Public Conference Series” of the Astronomical Observatory of Córdoba for the year **2023**, Córdoba, Argentina.
- Public dissertation and debate: “The origins of the Milky Way Galaxy”, March **2023**, Córdoba, Argentina.
- Activity Coordinator in the “Night of the Museums”, November **2022**, Córdoba, Argentina, for the activity “Discover the Solar System”.
- Public dissertation and debate: “A walkthrough the Universe”, September **2016**, San Juan, Argentina.

OTHER COURSES AND TRAINING

- Attendance and approval of the “**Adaptive Optics Training 2019**” course. Pontifical Catholic University of Chile, Santiago, Chile. March-April **2019**.
- Attendance and approval of the workshop “**Cosmology of baryons at high redshift**”. The Abdus Salam International Center for Theoretical Physics (ICTP), Trieste, Italy. August **2014**.
- Attendance and approval of COSPAR: “**Capacity Building Workshop on Planetary Science**” (Montevideo, Uruguay, July **2007**).
- Participation in the Solar Physics Workshop: “**LASCO Data Analysis**” (Universidad de la Punta, San Luis, Argentina, April **2007**).
- Attendance of the degree course “**Extrasolar Planets: Origin and Dynamics**”, Faculty of Exact, Physical and Natural Sciences. April **2007** (Resolution No. 193/2005-CEFN).
- Attendance and approval of the Third Chilean Advanced School of Astrophysics: “**Insights into Galaxy evolution from resolved stellar populations**” (University of Concepcion, Chile, January **2007**).
- Attendance and approval of the degree course “**The Subject of Reason**”, Faculty of Exact, Physical and Natural Sciences. October **2005** (Resolution No. 53/05-CD-FCEFN).
- Attendance and approval of the course “**Towards a logic for everyday life**”, Faculty of Exact, Physical and Natural Sciences. October **2004** (Resolution No. 41/2004-CD-FCEFN).

SCIENTIFIC PUBLICATIONS - FIRST AUTHOR

11) “Ionization state and geometry of the extragalactic HII región SMC-N88A for the interpretation of observations of galaxies in the epoch of reionization”, **Díaz, C.G.**, Mast, D., Oio, G., Bassett, R., **2023**, **BAAA**, 64, 127.

10) “NISCAL: Near Infrared Spectroscopy Calibrator”, **Díaz, C.G.**, Gaspar, G., Díaz, R.J.,**2023**, **BAAA**, 64, 329.

9) “Faint LAEs near z > 4.7 C IV absorbers revealed by MUSE”, **Díaz, C.G.**, Ryan-Weber, E.V., Karman, W., Caputi, K.I., Salvadori, S., Crighton, N.H., Ouchi, M., and Vanzella, E.,**2021**, **MNRAS**, 502, 2645.

8) “The flow of baryons: the origin of metal absorption systems at z > 3”, **Díaz, C.G.**, Ryan-Weber, E., V., Cooke, J., Crighton, N., H., Díaz, R., J., **2016**, **BAAA**, 58, 51.

7) “Tracking the chemical history of the Universe: the density of CIV at z ~ 6 ”, **Díaz, C.G.**, Ryan-Weber, E., V., Codoreanu, A., Pettini, M., Madau, P.,**2016**, **BAAA**, 58, 54.

6) “Large-scale environment of z~5.7 CIV absorption systems II. Spectroscopy of Lyman-α emitters”, **Díaz, C.G.**, Ryan-Weber, E., V., Cooke, J., Koyama, Y., Ouchi, M., **2015**, **MNRAS**, 448, 1240.

5) “Large-scale environment of z~5.7 CIV absorption systems I. Projected distribution of galaxies”, Diaz, C. G., Koyama, Y., Ryan-Weber, E., V., Cooke, J., Ouchi, M. (1999). , Shimasaku and K. , Nakata , F. ,**2014**, **MNRAS**, 442, 946.

4) “A galaxy as the source of a CIV absorption system close to the epoch of reionization”, **Díaz, C. G**., Ryan-Weber, E. V., Cooke, J., Pettini, M. and Madau, P., **2011**, **MNRAS**, 418, 820.

3) “Accurate stellar rotational velocities using the Fourier transform of the cross correlation maximum”, **Díaz, C.G.**, Gonzalez , J.F. , Levato , O.H.**2011**, **A&A**, 487, 363.

2) “Collisional activation of asteroids in cometary orbits”, **Díaz, C.G.** and Gil-Hutton, R., **2008**, **A&A**, 487, 363.

1) “Intrinsic Collision Probabilities and Impact Velocities for Asteroids in Outer Belt Families”, **Díaz, C.G.** and Gil-Hutton, R., **2006**, **BAAA**, 49, 54.

SCIENTIFIC PUBLICATIONS - COAUTHOR

9) “Ionizing photons produced by massive stars in SMC-N88a”, Krilich, M.T. and **Díaz, C.G.**, **2024**, **BAAA**, submitted, arXiv:2406.00126.

8) “Infrared variability of the active nucleus in NGC 2992”, Levis, S., Gaspar, G.,**Díaz, C.G.**, Mast, D., Díaz, R. J., **2023**, **BAAA**, 64, 247.

7) "GNIRS NIR Integral Field Spectroscopy of NGC 5128", Díaz, R. J., Mast, D., Gaspar, G., Günthardt, G., Dottori, H., Agüero, M. P., Camperi, J. A., **Díaz, C.G.**, Gimeno, G., and D'Ambra, A., **2021**, **BAAA**, 62, 219.

6) “Spectroscopic observations of the machine-learning selected anomaly catalogue from the AllWISE Sky Survey”, Solarz, A., Thomas, R., Montenegro-Montes, F. M., Gromadzki, M., Donoso, E., Koprowski, M., Wyrzykowski, L., **Diaz, C. G.**, Sani, E., and Bilicki, M., **2020**, **A&A**, 642A, 103.

5) “The faint host galaxies of C IV absorbers at z > 5”, Finlator, K., Doughty, C., Cai, Z., and **Díaz, C.G.**, **2020**, **MNRAS**, 493, 3223.

4) “On the lack of correlation between [O III]/[O II] and Lyman continuum escape fraction”, Bassett, R., Ryan-Weber, E. V., Cooke, J., **Díaz, C.G.**, Nanayakkara , T. , Yuan , T. -T. , Spitler , L. R. , Meštrić , U. , Garel , T. , Sawicki , M. , Gwyn , S. , and Golob , A. , .**2019**, **MNRAS**, 483, 5223.

3) “Lyman-continuum galaxies and the escape fraction of Lyman-break galaxies”, Cooke, J., Ryan-Weber, E., V., Garel, T. and **Díaz, C.G.**, **2014**, **MNRAS**, 441, 837.

2) “Superluminous supernovae at redshifts of 2.05 and 3.90”, Cooke, J., Sullivan, M., Gal-Yam, A., Barton, E., J., Carlberg, R., G., Ryan-Weber, E., V, Horst, C., Omori, Y. and **Díaz, C.G.**, **2012**, **Nature**, 491, 228.

1) “Pair-instability and super-luminous supernova discoveries at z = 2.05, z = 2.50, and z = 3.90”, Cooke, J., Sullivan, M., Gal-Yam, A., Carlberg, R., G., Ellis, R., S., Barton, E., J., Ryan-Weber, E., V., Horst, C., Omori, Y. and **Díaz, C.G.**, **2012**, **AIPC**, 1480, 200.

TECHNICAL REPORTS - ASTRONOMICAL INSTRUMENTATION

1) “Flamingos-2 On-Instrument Wavefront Sensor Repair 2018 - General Report” ,**Díaz, C.G.**, and Birchard, M., **2019, Gemini Observatory** (internal database).

PRESENTATIONS IN CONFERENCES

24) 65th Annual Meeting of the Argentine Astronomy Association (San Juan, Argentina, September **2023**. Contribution: "Production of ionizing photons from massive stars in SMC-N88a"

23) 64th Annual Meeting of the Argentine Astronomy Association (CABA, Argentina, September **2022**. Contributions presented: 1)"Ionization state and geometry of the HII SMC N88A region", 2)"NISCAL: Near Infrared Spectroscopy Calibrator ", and 3)"Infrared variability of the active nucleus in NGC 2992"

22) Conference: “2019 Elizabeth and Frederick White research Conference on Linking galaxies from the Epoch of initial star-formation to today” (Sydney, Australia, Febrero **2019**). Presentation: “Early contribution from sub-L* galaxies to the metals in the CGM at z>5”.

21) Workshop: “Gemini Workshop in Argentina: Current Events and Prospecting” (La Plata, Argentina, September **2018**). Presentation: “Flamingos-2: Spectroscopy and Direct Imaging in the Near Infrared”.

20) Conference: “Science and Evolution of Gemini Observatory” (San Francisco, USA, July **2018**).

19) Symposium: “The Olympian Symposium 2018: Gas a Stars from milli-to mega- parsecs” (Paralia Katerini, Grecia, May **2018**). Presentation: “Discovery of sub-L* galaxies in the proximity of metal absorption systems at z > 5: early contribution from faint galaxies to the metals in the CGM”

18) Conference: “Distant Galaxies from the Far South” (Bariloche, Argentina - December **2017**). Presentation: “Faint LAEs in the proximity of intergalactic metals at z > 4.7”

17) 60th Annual Meeting of the Argentine Astronomy Association (Malargüe, Argentina, September **2017**). Presentation: “Faint galaxies polluting the intergalactic medium with metals at z > 5”.

16) 59th Annual Meeting of the Argentine Astronomy Association (San Juan, Argentina, September **2016**). Contribution: “Can’t miss it: eleven chances in one shot with MUSE.”

15) 58th Annual Meeting of the Argentine Association of Astronomy (La Plata, Argentina, September **2015**). Contributions presented: 1) “Tracking the chemical history of the Universe: the density of CIV at z~6”, 2) “The environment of a CIV absorption system at z~5.7”, 3) “The flow of baryons: the origin of metal absorption systems at z>3”.

14) Workshop: “Cosmology from baryons at high redshift” (ICTP, Trieste, Italia, August **2014**). Presentation: “The environment of highly ionized absorption systems at the end of hydrogen reionization”.

13) Workshop: “Lyman continuum leakage and cosmic reionization” (Estocolmo, Suecia, August **2014**). Presentation: “The environment of CIV absorption systems in the post-reionization Universe: discovery of the galaxies that dominate the ionizing flux density at z~6”.

12) Conference: “Annual Scientific Meeting of the Astronomical Society of Australia” (Sydney, Australia, July **2014**). Presentation: “The environment of highly ionized absorption systems in the post-reionization Universe at z~5.7 ”.

11) Conference: “Reionization in the Red Centre: New windows on the high redshift Universe” (Uluru, Australia, July **2013**). Presentation: “Large-scale environment of CIV absorption systems at z ~ 5.7 : Galaxy distribution and the ionization state of the IGM after the Epoch of Reionization”.

10) Conference: “First Binational Meeting of the Argentine Astronomy Association and the Chilean Astronomical Society” (San Juan, Argentina, October **2011**). Contributions presented: 1) “A galaxy-CIV absorber pair close to the Epoch of Reionization”, and 2) “First probe of the physical processes of cosmic reionization”.

9) Conference: “The Cosmic Odyssey of Baryons - Accreting, Outflowing and Hiding” (Marsella, Francia, June **2011**). Presentation: “A galaxy-C IV absorber pair close to the Epoch of Reionization ”.

8) 53rd Annual Meeting of the Argentine Astronomy Association (Salta, Argentina, September **2010**). Contribution: “In search of those responsible for enriching the IGM to z >5.5”.

7) Conference: “Annual Scientific Meeting of the Astronomical Society of Australia” (Hobart, Tasmania, Australia, July **2010**). Presentation: “Testing galactic outflows at z > 5.5”.

6) Conference: “The First Galaxies, Quasars & Gamma-Ray Bursts” (Pennsylvania State University, USA, June **2010**). Contribution: “Testing galactic outflows at z > 5.5”.

5) 51st Annual Meeting of the Argentine Astronomy Association (San Juan, Argentina, September **2008**). Presentation: “Use of cross correlations in determining the rotation speed of stars A”.

4) “Fourth Planetary Sciences Workshop (San Juan, Argentina, February **2008**). Contribution: “Activating Asteroids in Cometary Orbits through collisions.”

3) 50th Annual Meeting of the Argentine Astronomy Association (Malargüe, Mendoza, Argentina, September **2007**). Contribution: “Activating Asteroids in Cometary Orbits through collisions”.

2) 49th Annual Meeting of the Argentine Astronomy Association (Capilla del Monte, Argentina, September **2006**). Contribution: “Intrinsic probability and collision velocities for families of asteroids.”

1) “Third Planetary Sciences Workshop” (Colonia del Sacramento, Uruguay, March **2006**). Contribution: “Collision-induced activity in Asteroids in Cometary Orbits”.