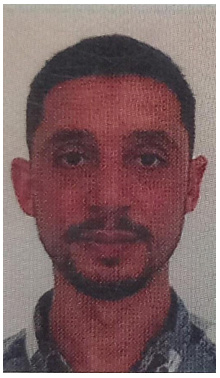
Carlos Gonzalo Díaz (PhD)



Professional Scientist in Astronomy and Astrophysics

- 18 yrs of science research
- 9 yrs of teaching higher education
- 3 yrs of complex systems 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:

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.

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 -

OPERATION OF COMPLEX SYSTEMS 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. -rrutten@gemini.edu Dr. Díaz, R. J. -ruben.diaz@noirlab.edu

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.

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

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).

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.

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”.

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).