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Research Positions

- since Oct 2024  **Humboldt Fellow**, Max Planck Institute for Astrophysics, Garching - Germany.
Host: Prof. Dr. Selma de Mink.
- Mar 2023 - Sep 2024  **Postdoctoral Scientific Staff**, University of Hamburg, Hamburg - Germany.
Adviser: Prof. Dr. Stephan Rosswog.
- Oct 2019 - Feb 2023  **Postdoctoral Researcher**, Charles University, Prague - Czech Republic.
Adviser: Doc. Dr. Ondřej Pejcha.
- Feb - Nov 2018  **Visiting Ph.D. student**, Max Planck Institute for Extraterrestrial Physics, Garching - Germany. Hosts: Prof. Dr. Andreas Burkert & Dr. Marc Schartmann.
- Jan - Mar 2013  **Research Intern**, Cerro Tololo Inter-American Observatory, La Serena - Chile.
Adviser: Dr. Percy Gómez.

Education

- Sep 2019  **Ph.D. in Astrophysics**, *summa cum laude*, Pontificia Universidad Católica de Chile.
Thesis: *"The Role of Interacting Stellar Winds Feeding Sagittarius A*"*.
Advisers: Prof. Dr. Jorge Cuadra & Dr. Marc Schartmann.
- Mar 2015  **Master in Astrophysics**, *summa cum laude*, Pontificia Universidad Católica de Chile.
Thesis: *"Thin-shell instabilities and clump formation due to colliding stellar winds in the Galactic Centre"*.
Adviser: Prof. Dr. Jorge Cuadra.
- Dec 2012  **Bachelor in Astronomy**, *summa cum laude*, Universidad de Concepción, Chile.
Ranked 1 out of 35 enrolled at the Astronomy program in 2009.

Refereed Publications

Summary: 13 published (+1 submitted, +2 in prep.), 8 first-author papers (+1 in prep.).
Papers with students are shown in bold italic. NASA ADS (May 2025): 136 citations.

- 1 **Shaqil, W., Calderón, D.,** Rosswog, S., Cuadra, J., Ciurlo, A., Morris, M. R., Campbell, R. D., & Ghez, A. M. (2025). Tidal phenomena in the Galactic Center: The Curious Case of X7. *Submitted to A&A*, Article arXiv:2504.15337. [🌐 https://doi.org/10.48550/arXiv.2504.15337](https://doi.org/10.48550/arXiv.2504.15337)
- 2 **Calderón, D.,** Cuadra, J., Russell, C. M. P., Burkert, A., Rosswog, S., & Balakrishnan, M. (2025). The formation and stability of a cold disc made out of stellar winds in the Galactic centre. *A&A*, 693, Article A18o, A18o. [🌐 https://doi.org/10.1051/0004-6361/202452800](https://doi.org/10.1051/0004-6361/202452800)
- 3 Blaña, M., Burkert, A., Fellhauer, M., **Calderón, D.,** Behrendt, M., & Schartmann, M. (2024). The Milky Way satellite galaxy Leo T: A perturbed cored dwarf. *A&A*, 692, Article A183, A183. [🌐 https://doi.org/10.1051/0004-6361/202451649](https://doi.org/10.1051/0004-6361/202451649)
- 4 Balakrishnan, M., Corrales, L., Markoff, S., Nowak, M., Haggard, D., Wang, Q. D., Neilsen, J., Russell, C. M. P., **Calderón, D.,** Cuadra, J., & Baganoff, F. (2024). Multistructured Accretion Flow of Sgr A*. I. Examination of a Radiatively Inefficient Accretion Flow Model. *ApJ*, 974(1), Article 98, 98. [🌐 https://doi.org/10.3847/1538-4357/ad6c08](https://doi.org/10.3847/1538-4357/ad6c08)
- 5 Balakrishnan, M., Russell, C. M. P., Corrales, L., **Calderón, D.,** Cuadra, J., Haggard, D., Markoff, S., Neilsen, J., Nowak, M., Wang, Q. D., & Baganoff, F. (2024). Multistructured Accretion Flow of Sgr A*. II. Signatures of a Cool Accretion Disk in Hydrodynamic Simulations of Stellar Winds. *ApJ*, 974(1), Article 99, 99. [🌐 https://doi.org/10.3847/1538-4357/ad6866](https://doi.org/10.3847/1538-4357/ad6866)

- 6 **Calderón, D.**, Pejcha, O., Metzger, B. D., & Duffell, P. C. (2024). The effect of relativistic precession on light curves of tidal disruption events. *MNRAS*, 528(2), 2568–2587. <https://doi.org/10.1093/mnras/stae194>
- 7 Pejcha, O., **Calderón, D.**, & Kurfürst, P. (2022). Supernovae in colliding-wind binaries: observational signatures in the first year. *MNRAS*, 510(3), 3276–3290. <https://doi.org/10.1093/mnras/stab3729>
- 8 **Calderón, D.**, Pejcha, O., & Duffell, P. C. (2021). Moving-mesh radiation-hydrodynamic simulations of wind-reprocessed transients. *MNRAS*, 507(1), 1092–1105. <https://doi.org/10.1093/mnras/stab2219>
- 9 Gómez, P. L., & **Calderón, D.** (2020). The Dynamics of the Wide-angle Tailed (WAT) Galaxy Cluster A562. *AJ*, 160(4), Article 152. <https://doi.org/10.3847/1538-3881/aba831>
- 10 **Calderón, D.**, Cuadra, J., Schartmann, M., Burkert, A., Prieto, J., & Russell, C. M. P. (2020). Three-dimensional simulations of clump formation in stellar wind collisions. *MNRAS*, 493(1), 447–467. <https://doi.org/10.1093/mnras/staa090>
- 11 **Calderón, D.**, Cuadra, J., Schartmann, M., Burkert, A., & Russell, C. M. P. (2020). Stellar Winds Pump the Heart of the Milky Way. *ApJL*, 888(1), Article L2. <https://doi.org/10.3847/2041-8213/ab5e81>
- 12 **Calderón, D.**, Cuadra, J., Schartmann, M., Burkert, A., Plewa, P., Eisenhauer, F., & Habibi, M. (2018). The Galactic Centre source G2 was unlikely born in any of the known massive binaries. *MNRAS*, 478(3), 3494–3505. <https://doi.org/10.1093/mnras/sty1330>
- 13 **Calderón, D.**, Bauer, F. E., Veilleux, S., Graciá-Carpio, J., Sturm, E., Lira, P., Schulze, S., & Kim, S. (2016). Searching for molecular outflows in hyperluminous infrared galaxies. *MNRAS*, 460(3), 3052–3062. <https://doi.org/10.1093/mnras/stw1210>
- 14 **Calderón, D.**, Ballone, A., Cuadra, J., Schartmann, M., Burkert, A., & Gillessen, S. (2016). Clump formation through colliding stellar winds in the Galactic Centre. *MNRAS*, 455(4), 4388–4398. <https://doi.org/10.1093/mnras/stv2644>

[ADS library link](#)

Funding and Awards

2025-2026	■ Cycle 4 JWST Theory grant #8655 (PI: C. Russell) as co-Investigator, USA.
Jan 2025	■ FONDECYT Regular 2025 (PI: J. Cuadra), as co-Investigator, Chile.
Jul 2024	■ Heraeus Fellowship (5 k€), Wilhelm and Else Heraeus Foundation, Germany.
Sep 2023	■ Quantum Universe Postdoctoral Grant (10 k€), University of Hamburg, Germany.
Mar 2023	■ Humboldt Fellowship (~100 k€), Alexander von Humboldt Foundation, Germany.
Jan 2023	■ 2,210,400 CPU hours awarded , IT4Innovations Supercomputing Center, Czechia.
2022-2023	■ Cycle 24 Chandra Theory grant #24200412 (PI: C. Russell) as co-Investigator, USA.
Mar 2022	■ 936,000 CPU hours , IT4Innovations National Supercomputing Center, Czechia.
2021-2022	■ Cycle 23 Chandra Theory grant #23610258 (PI: C. Russell) as co-Investigator, USA.
2015-2019	■ Doctoral Fellowship , National Commission for Scientific and Technological Research. - Including internship abroad for 10 months and travel budget for 2 years (total: ~20 k€).
Mar 2015	■ Doctoral Excellence Award (~10 k€), Pontificia Universidad Católica de Chile.
2014, 2016, 2018	■ Adelina Gutiérrez Travel Grant , Chilean Astronomical Society (SOCHIAS).
2013-2014	■ Master Fellowship , National Commission for Scientific and Technological Research.
2009-2012	■ Undergraduate Scholarship (~8 k€), Center for Excellence in Astrophysics and Associated Technologies (CATA).

Service & Skills

Coding	■ C, FORTRAN, Python, SHELL scripts.
Languages	■ Czech (B1), English (C1), German (A2), Spanish (mother tongue).
Professional	■ SOC member of the XIX Chilean Astronomical Society Annual Meeting (Nov 2024). ■ SOC member of the 2nd Workshop of Astronomy Students (March 2017).
Referee	■ Astrophysical Journal (3), Czech Science Agency (2), Israel Science Foundation.
Supervision	■ Anthony Kirilov (Ph.D. student at Charles University - expected Aug 2026). ■ Wasif Shaqil (Master student at University of Hamburg - Apr 2025). Next position Ph.D. student at Liverpool John Moores University, United Kingdom.
Thesis Committee	■ Michal Jireš (Bachelor in Physics at Charles University - Feb 2024). ■ Yelyzaveta Pulnova (Master in Physics at Charles University - Sep 2021).

Teaching Experience

2024-2025	■ Teaching assistant at Ludwig Maximilian University of Munich in graduate course: "Astrophysics Seminar" (Fall 2024, Spring 2025).
2023-2024	■ Teaching assistant at University of Hamburg in undergraduate course: "Introduction to Astronomy" (Spring 2023); and graduate course: "Astrophysical Hydrodynamics" (Fall 2023).
2019 - 2023	■ Co-organiser of Science Coffee (also as a class), Charles University.
Oct 2021	■ Special lecture: "Introduction to Radiation Hydrodynamics", Charles University.
2017	■ Science Coffee (in charge once per week), Pontificia Universidad Católica de Chile.
2015-2017	■ Teaching Assistant at Pontificia Universidad Católica de Chile in undergraduate courses: "Extragalactic Astrophysics" (Fall 2017), "Introduction to Physics" (Spring 2015), "Introduction to Astronomy" (Fall 2015); and graduate courses: "Galactic Centre Astrophysics" (Spring 2016), "Radiative Processes in Astrophysics" (Fall 2016).
2011-2012	■ Teaching Assistant at Universidad de Concepción in undergraduate courses: "General Astrophysics" (Fall 2012), and "Electromagnetic Theory" (Spring 2011).

Extended Workshops and Summer Schools

Jul 2024	■ Special Meeting: 73rd Lindau Nobel Laureate Meeting, Lindau – Germany
Jul 2023	■ School: Kavli Summer Program in Astrophysics, Garching – Germany
Jul 2022	■ Workshop: "Plasma Under Strong Gravity", Aspen Center for Physics, Aspen – USA.
Aug 2017	■ School: "Astrophysical Plasmas", Niels Bohr Institute, Copenhagen – Denmark.
Apr 2015	■ School "Scientific Writing for Young Astronomers", EDP Sciences, Puerto Varas – Chile.
Jun 2014	■ School: "Galaxies: Near and Far, Young and Old", Vatican Observatory – Vatican City

Conference Oral Contributions

Sep 2024	■ "X-ray transients, theory and observational perspectives" Conference - Warsaw, Poland. ■ "Tidal Disruption Events and Nuclear Transients" Conference - Heraklion, Greece.
Jul 2024	■ Invited Talk at the 17th Marcel Grossmann Meeting - Pescara, Italy.
Apr 2024	■ RAMSES User Meeting 2024 - New York, USA.
Dec 2023	■ "Fundamental Physics at the Galactic Centre" Workshop - Porto, Portugal.
Jul 2023	■ "Black-hole accretion discs 50 years on: current fortunes and new challenges" and "Supermassive Black Hole Transients and Their Host Galaxies" Special Sessions at EAS - Kraków, Poland.
Apr 2023	■ Invited Talk at Galactic Center Workshop - Granada, Spain. ■ "Quantum Universe Day" at DESY - Hamburg, Germany.



Conference Oral Contributions (continued)

Nov 2022	6th Users' Conference of IT4Innovations - Ostrava, Czech Republic.
Oct 2022	RAGTIME24 Workshop - Opava, Czech Republic.
Sep 2022	31st Texas Symposium on Relativistic Astrophysics - Prague, Czech Republic.
Nov 2021	<i>"The Predictive Power of Computational Astrophysics as a Discovery Tool"</i> Symposium - Online.
Sep 2021	RAGTIME23 Workshop - Opava, Czech Republic.
Feb 2021	43rd COSPAR Assembly - Online Symposium.
Jan 2021	xvi Chilean Astronomical Society (SOCHIAS) Annual Meeting - Online.
Jul 2020	European Astronomical Society (EAS) Annual Meeting - Online.
Oct 2019	<i>"Common-Envelope Evolution and Post-Common-Envelope Systems"</i> Workshop - London, UK.
Sep 2018	RAMSES User Meeting 2018 - Lyon, France.
Jul 2018	42nd COSPAR Assembly - Pasadena, USA.
Nov 2016	xv Latin American Regional IAU Meeting (LARIM) - Cartagena, Colombia.
Mar 2016	xiii Chilean Astronomical Society (SOCHIAS) Annual Meeting - Antofagasta, Chile.
Feb 2016	<i>"Dynamics and Accretion at the Galactic Center"</i> Workshop - Aspen, USA.
Mar 2015	xii Chilean Astronomical Society (SOCHIAS) Annual Meeting - Puerto Varas, Chile.
Jun 2014	European Week of Astronomy and Space Sciences (EWASS) - Geneva, Switzerland.

Invited Talks at Research Institutions

Jul 2025	Astronomy seminar at The Open University - Milton Keynes, UK.
Mar 2025	Astronomy seminar at Universidad de Santiago de Chile - Santiago, Chile.
	Astronomy seminar at Universidad de Concepción - Concepción, Chile.
Feb 2025	Institute seminar at Max Planck Institute for Astrophysics - Garching, Germany.
Jan 2025	Astronomy seminar at Departamento de Astronomía, Universidad de Chile - Santiago, Chile.
Apr 2024	Astrophysics seminar at University of Delaware - Newark, USA.
Feb 2024	Quantum Universe Postdoctoral Grant Prize talk at DESY - Hamburg, Germany.
Jan 2024	Computational Astrophysics seminar at Ludwig Maximilian University - Munich, Germany.
Oct 2023	Astronomy seminar at Universidad de Valparaíso - Valparaíso, Chile.
	Astronomy seminar at Universidad Federico Santa María - Valparaíso, Chile.
Sep 2023	Astronomy colloquium at Universidad de Concepción - Concepción, Chile.
Jul 2023	Computational Astrophysics seminar at Ludwig Maximilian University - Munich, Germany.
Jun 2023	Observatory Colloquium at Hamburg Observatory - Hamburg, Germany.
Oct 2021	Relativistic Seminar at Silesian University - Opava, Czech Republic.
Sep 2021	Astronomy seminar at Masaryk University - Brno, Czech Republic.
Mar 2021	Stellar seminar at Czech Academy of Sciences - Online.
Feb 2021	Relativistic seminar at Charles University - Online.
Apr 2020	ELI Beamlines Scientific Seminar - Dolní Břežany, Czech Republic.
Feb 2020	Numerical Mathematics Seminar at Charles University - Prague, Czech Republic.
Oct 2019	Japan Aerospace Exploration Agency (JAXA) High-Energy Seminar - Sagami-hara, Japan.
Aug 2019	European Southern Observatory (ESO) Seminar - Santiago, Chile.
Oct 2018	G2G on WR140 Workshop, Royal Observatory of Edinburgh - Edinburgh, Scotland.
Sep 2018	Centre for mathematical Plasma-Astrophysics seminar, KU Leuven - Leuven, Belgium.
Jul 2017	High Energy Astrophysics Seminar, Max Planck Institute for Astrophysics - Germany.










Invited Talks at Research Institutions (continued)

- Feb 2017  Infrared group Tea meeting, Max Planck Institute for Extraterrestrial Physics - Germany.
Jun 2016  Astronomy seminar at Universidad de Concepción - Concepción, Chile.

Conference Poster Contributions

- Jun 2025  “X-ray QPEs and Repeating Nuclear Transients” Workshop - Madrid, Spain.
Nov 2022  “The Impact of Binaries on Stellar Evolution” Workshop - Garching, Germany.
Jul 2020  European Astronomical Society (EAS) Annual Meeting - Leiden, Netherlands.
Oct 2019  “New Horizons in Galactic Center Astronomy and Beyond” Workshop - Yokohama, Japan.
Jun 2017  European Week of Astronomy and Space Sciences (EWASS) - Prague, Czech Republic.
Oct 2016  xv Latin American Regional IAU Meeting (LARIM) - Cartagena, Colombia.
Jul 2016  “The Multi-Messenger Astrophysics of the Galactic Centre” Symposium - Cairns, Australia.
Jul 2015  International Workshop on Wolf-Rayet stars - Potsdam, Germany.
Mar 2015  “Unveiling the AGN-Galaxy Evolution Connection” Workshop - Puerto Varas, Chile.
Jul 2014  European Week of Astronomy and Space Sciences (EWASS) - Geneva, Switzerland.
Jan 2014  223rd American Astronomical Society Meeting - Baltimore, USA.
Nov 2013  xiv Latin American Regional IAU Meeting (LARIM) - Florianopolis, Brazil.

Outreach Efforts

- Jul 2024  Galactic Centre Virtual Reality at the “Sternstunden Festival”, Hamburg Observatory.
Jun 2024  Galactic Centre Virtual Reality at the “Quantum Universe Day” at DESY in Hamburg.
2023-2024  Editor of the Hamburg Observatory Newsletter.
Jul 2023  “Ask an Astronomer” and Tour Guide at the “Sternstunden Festival”, Hamburg Observatory.
2020  Interview at online newspaper “El Contraste” during Solar Eclipse 2020, Chile.
2014-2016  Quantum Physics course for high-school teachers, Pontificia Universidad Católica de Chile.
2015  Special lectures for students during the “Day of Astronomy” in Curicó, Chile.
2013-2014  Chemistry and Physics courses for school students, Pontificia Universidad Católica de Chile.
2011-2012  Guide of public astronomical observations at Universidad de Concepción, Chile.

References

Prof. Dr. Jorge Cuadra

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