

Diego Calderón

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Research Positions

- since Mar 2023 📌 **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: Dr. Ondřej Pejcha.
- Feb – Nov 2018 📌 **Visiting Student**, Max Planck Institute for Extraterrestrial Physics, Germany.
Hosts: Prof. Dr. Andreas Burkert & Dr. Marc Schartmann.

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: 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: 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: 9 papers in total (1 submitted), 6 first-author papers. NASA ADS (August 2023): 99 citations.

- 1 Blaña, M., Burkert, A., Fellhauer, M., **Calderón, D.**, Behrendt, M., & Schartmann, M. (2023). The Milky Way satellite galaxy Leo T: a perturbed cored dwarf? *Submitted to ApJ*.
- 2 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>
- 3 **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>
- 4 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>
- 5 **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>
- 6 **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>
- 7 **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>
- 8 **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>

- 9 **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

- Mar 2023 **Humboldt Research Fellowship**, Alexander von Humboldt Foundation, Germany.
- Jan 2023 **2,210,400 CPU hours awarded**, IT4Innovations Supercomputing Center, Czechia.
- Mar 2022 **936,000 CPU hours**, IT4Innovations National Supercomputing Center, Czechia.
- 2015-2019 **Doctoral Fellowship**, National Commission for Scientific and Technological Research.
- Mar 2015 **Doctoral Excellence Award**, 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**, Center for Excellence in Astrophysics and Associated Technologies (CATA).

Skills

- Languages **Czech (B1), English (C1), Spanish (mother tongue).**
- Coding **c, FORTRAN, Python, SHELL scripts.**
- Referee service **Astrophysical Journal, Israel Science Foundation.**
- Student supervision **Anthony Kirilov (Ph.D. student at Charles University - since Oct 2021).**
Wasif Shaqil (Master student at University of Hamburg - since Oct 2023).
- Thesis Committee **Yelyzaveta Pulnova (Master in Physics at Charles University - Sep 2021).**

Teaching Experience

- 2023-2024 **Teaching assistant at University of Hamburg: “Introduction to Astronomy” (Spring 2023), “Mechanics and Thermodynamics” (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 courses: “Extragalactic Astrophysics” (Fall 2017), “Galactic Centre Astrophysics” (Spring 2016), “Radiative Processes in Astrophysics” (Fall 2016), “Introduction to Astronomy” (Fall 2015).**
- 2011-2012 **Teaching Assistant at Universidad de Concepción in courses: “General Astrophysics” (Fall 2012), “Electromagnetic Theory” (Spring 2011).**

Summer Schools and Extended Workshops

- 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**
- Jan - Mar 2013 **Cerro Tololo Inter-American Observatory REU Program, La Serena - Chile.**

Conference Oral Contributions

- 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.
- Nov 2022 ■ 6th Users' Conference of IT4Innovations - Ostrava, Czech Republic.
- Oct 2022 ■ RAGTIME24 - Opava, Czech Republic.
- Sep 2022 ■ 31st Texas Symposium on Relativistic Astrophysics - Prague, Czech Republic.
- Nov 2021 ■ *"The Predictive Power of Computational Astrophysics as a Discovery Tool"* - Online.
- Sep 2021 ■ RAGTIME23 - 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 ■ *"Common-Envelope Evolution and Post-Common-Envelope Systems"* - London, UK.
- Sep 2018 ■ RAMSES User Meeting - 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 ■ *"Dynamics and Accretion at the Galactic Center"* - 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

- Oct 2023 ■ European Southern Observatory (ESO) Seminar - Santiago, Chile.
- Jun 2023 ■ Observatory Colloquium, Hamburg Observatory - Hamburg, Germany.
- Oct 2021 ■ Relativistic Seminar, Silesian University - Opava, Czech Republic.
- Sep 2021 ■ Astronomy Seminar, Masaryk University - Brno, Czech Republic.
- Mar 2021 ■ Stellar Seminar, Czech Academy of Sciences - Online.
- Feb 2021 ■ Relativistic seminar, Charles University - Online.
- Apr 2020 ■ ELI Beamlines Scientific Seminar - Dolní Břežany, Czech Republic.
- Feb 2020 ■ Numerical Mathematics Seminar, 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.
- Feb 2017 ■ IR group Tea Meeting, Max Planck Institute for Extraterrestrial Physics - Germany.
- Jun 2016 ■ Astronomy Seminar, Universidad de Concepción - Concepción, Chile.








Conference Poster Contributions

- Nov 2022 ■ *"The Impact of Binaries on Stellar Evolution"* - Garching, Germany.
- Jul 2020 ■ European Astronomical Society (EAS) Annual Meeting - Leiden, Netherlands.
- Oct 2019 ■ *"New Horizons in Galactic Center Astronomy and Beyond"* - Yokohama, Japan.
- Jun 2017 ■ European Week of Astronomy and Space Sciences (EWASS) - Prague, Czech Republic.

Conference Poster Contributions (continued)

- Oct 2016  xv Latin American Regional IAU Meeting (LARIM) - Cartagena, Colombia.
- Jul 2016  "The Multi-Messenger Astrophysics of the Galactic Centre" - Cairns, Australia.
- Jul 2015  International Workshop on Wolf-Rayet stars - Potsdam, Germany.
- Mar 2015  "Unveiling the AGN-Galaxy Evolution Connection" - 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

- 2023  Editor of the Hamburg Observatory Newsletter.
-  "Ask an Astronomer" and Tour Guide at the "Sternstunden Festival", Hamburg Observatory.
- 2020  Interview at local newspaper *El Contraste* during Solar Eclipse 2020, Chile.
- 2014-2016  Quantum Physics course for high-school teachers, Pontificia Universidad Católica de Chile.
- 2015  Special outreach lectures for children on the Day of Astronomy and the Day of the Sun.
- 2013-2014  Chemistry and Physics courses for school students, Pontificia Universidad Católica de Chile.
- 2011-2012  Guided observations for general public at Universidad de Concepción.

References

Dr. Jorge Cuadra

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