

# María Teresa Valdivia Mena

## Curriculum Vitae

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📄 <https://tere-valdivia.github.io/>

## Education

- Sep 2020 - **PhD (Dr. rer. nat) in Astrophysics**, *Max Planck Institut für Extraterrestrische Physik - Ludwig Maximilians Universität*, Garching Germany, **Currently enrolled through the International Max Planck Research School.**
- Mar 2018 - **Master of Science in Astronomy**, *Universidad de Chile*, Santiago, Chile, **Thesis**  
Aug 2020 **Title:** Molecular Clouds in Extreme Environments of the Low-Metallicity Magellanic System.
- Mar 2014 - **Bachelor of Science in Astronomy**, *Universidad de Chile*, Santiago, Chile, Graduated with Highest Distinction.  
Dec 2017 Also obtained a Minor in Scientific Computing during the same period
- Mar 2012 - **International Baccalaureate (IB) Diploma**, *Santiago College School*, Santiago, Chile.  
Dec 2013 High Level: Physics, Mathematics and English (Literature).

## Research Interests

- Kinematic properties of gas around embedded protostars
- Asymmetric infall mechanisms from the natal core and beyond towards protostellar disks
- Molecular emission properties of the Interstellar Medium
- Embedded stages of low-mass star formation

## Publications

- Nov 2022 **PRODIGE - Envelope to disk with NOEMA I. A 3000 au streamer feeding a Class I protostar**, Valdivia-Mena, M. T., Pineda, J. E., Segura-Cox, D. M., Caselli, P. et. al., *Astronomy & Astrophysics*, 667, A12.
- Sep 2020 **ALMA resolves molecular clouds in metal-poor Magellanic Bridge A**, Valdivia-Mena, M. T., Rubio, M., Bolatto, A. D., Saldaño, H. P. and Verdugo, C., *Astronomy & Astrophysics*, 641, A97.
- Aug 2019 **Molecular Clouds resolved with ALMA  $^{12}\text{CO}$  J=1-0 and J=2-1 observations towards the Magellanic Bridge**, Valdivia, M. T., Muñoz, M., Rubio, M. and Saldaño, H., *Boletín de la Asociación Argentina de Astronomía*, 61, 134-136.

## Presentations

### Seminars

- Dec 12th 2022 **Tuesday UVa / NRAO Astronomy (TUNA) Lunch Talk**, NRAO and Virtual,  
**Talk:** *Rivers in the sky: streamers discovered towards two young embedded sources in Perseus.*

- Dec 12th 2022 **IRAM-Wisc-CAS Seminar**, Virtual, **Talk:** *Rivers in the sky: streamers discovered towards two young embedded sources in Perseus.*
- Nov 8th 2022 **Star and Planet Formation Seminar**, ESO Garching and Virtual, **Talk:** *Rivers in the sky: streamers discovered towards two Class I sources in Perseus.*
- Conferences**
- Aug 3rd - 7th, 2022 **From Clouds to Planets II: The Astrochemical Link**, Harnack Haus, Berlin, Germany, **Talk:** *Rivers in the sky: streamers discovered towards two Class I sources in Perseus.*
- Jun 27th - Jul 1st, 2022 **European Astronomical Society Annual Meeting 2022**, Palau de Congressos, Valencia, Spain, **Talk:** *Rivers in the sky: Streamers discovered towards two embedded protostars in Perseus.*
- Apr 4th - 6th, 2022 **Multi-line Diagnostics of the Interstellar Medium**, Hotel Le Saint Paul, Nice, France, **Poster:** *River in the sky: the first streamer feeding a Class I protostar.*
- Mar 2nd - 4th, 2022 **Meeting of ALMA Young Astronomers**, Virtual, European ALMA Regional Centre Network, **Talk:** *Rivers in the sky: streamers discovered towards two Class I sources in Perseus.*
- Nov 4th - 5th, 2021 **12th IMPRS Students Symposium**, Max Planck Institute for Astrophysics, Garching, Germany, **LOC member and Talk:** *River in the sky: A streamer feeding a Class I protostar.*
- Oct 4th - 29th, 2021 **Gaps, Rings, Spirals, and Vortices: Structure Formation in Planet-Forming Disks**, Munich Institute for Astro- and Particle Physics, Garching, Germany, **Talk:** *A Class I protostar with a high streamer mass infall rate.*
- Jun 28th - Jul 2nd, 2021 **European Astronomical Society Annual Meeting 2021**, Virtual, Leiden, Netherlands, **Talk:** *River in the sky: A streamer feeding a Class I protostar.*
- Nov 3th - 9th, 2019 **Latin American Regional IAU Meeting 2019**, Hotel Antofagasta, Antofagasta, Chile, **Talk:** *ALMA observations of molecular tracers in R136 in 30Dor: How does cold gas survive?*
- Oct 14th - 18th, 2019 **ALMA2019: Science Results and Cross-Facility Synergies**, T-Hotel Cagliari, Cagliari, Italy, **Poster (Co-Author with M. Rubio):** *Cold Gas Survives near R136 in 30 Doradus.*
- Oct 7th - 12th, 2018 **Second Binational AAA-SOCHIAS Meeting**, Hotel Club La Serena, La Serena, Chile, **Poster:** *Molecular Clouds Resolved in  $^{12}\text{CO}(1-0)$  and  $^{12}\text{CO}(2-1)$  in the Magellanic Bridge.*

## Observing Experience

- **Atacama Large Millimeter/Submillimeter Array (ALMA):** PI of accepted project 2022.1.00898.S (grade C) "Quest for the source: connecting a filament to infalling gas towards a protostar in Barnard 5" plus experience with calibration and imaging.
- **Northern Extended Millimetre Array (NOEMA):** PI of accepted project W22AH (grade A) "The connection between streamer and protostellar disk in Per-emb-50" plus experience with calibration and imaging.
- **Green Bank Telescope (GBT):** PI and on-site observer of accepted project GBT22B-163 "Mind the gap: connecting the scales between filaments and protostars" (2022B). Also obtained qualification as remote observer.
- **IRAM 30m:** PI of accepted project 124-21 "Go with the flow? Streamer vs. envelope mass infall towards a Class I protostar" (2022A) and remote observing experience for this project. On-site

and remote observing experience for project 090-21 (PI: J. Pineda), where I participate as Co-I. Additionally, experience with reduction using CLASS.

- **Atacama Pathfinder Explorer (APEX)**: PI of accepted project C104-9709 (2019B). On-site observer for Chilean time in three occasions: June 2017 (2017A), April 2018 (2018A) and May 2019 (2019A). Additionally, experience with reduction using CLASS.

## Workshops

- Aug 22th - 26th, 2022 **17th IMPRS Heidelberg Astronomy Summer School: Astronomy, astro-chemistry & the origin of life**, *Heidelberg, Germany*, International Max Planck Research School for Astronomy and Cosmic Physics, University of Heidelberg.
- Aug 3rd - 5th, 2022 **Green Bank Telescope (GBT) Remote Observer Training Workshop**, *Virtual Workshop*, NRAO.
- Nov 15th - 23rd, 2021 **10th IRAM 30-meter School on Millimeter Astronomy**, *Virtual Workshop*, Institut de Radioastronomie Millimétrique.
- Mar 14th - 19th, 2021 **2021 Submillimeter Array Interferometry School**, *Virtual Workshop*, Harvard & Smithsonian Center for Astrophysics, in conjunction with the ASIAA and the University of Hawaii.
- Oct 7th - 11th, 2019 **European Radio Interferometry School 2019**, *Gothenburg, Sweden*, Onsala Space Observatory and Chalmers University of Technology.
- Oct 1st - 5th, 2018 **II International Astrochemistry School**, *Universidad Autónoma de Chile, Santiago, Chile*, Universidad Autónoma de Chile.
- Aug 20 - 29th, 2018 **La Serena School for Data Science: Applied Tools for Data Driven Sciences**, *La Serena, Chile*, Association of Universities for Research in Astronomy, National Science Foundation (USA) and Agencia Nacional de Investigación y Desarrollo (Chile).

## Teaching Experience

- Sep 2018 - Jul 2019 **Teaching Assistant for the course "Experimental Astronomy"**, *Universidad de Chile*, Includes giving classes, marking and supervising activities, Undergraduate course.
- Mar 2019 - Jul 2019 **Teaching Assistant for the course "Introduction to Cosmology"**, *Universidad de Chile*, Includes giving classes and marking, Undergraduate course.
- Jan 2019 **Teaching Assistant for Universidad de Chile's Summer School**, *Escuela de Verano, Universidad de Chile*, Course: Planetary Sciences, High School level.
- Sep 2017 - Oct 2017 **Teaching Assistant for the Data Visualization Diploma**, *Pontificia Universidad Católica de Chile*, Diploma Course.
- Mar 2017 - Jul 2017 **Teaching Assistance for the course "Mechanics"**, *Universidad de Chile*, Includes giving classes and marking, Undergraduate Course.

## Outreach

- Aug 30th 2022 **"Discos protoplanetarios, el origen de los mundos"**, *Public talk, High School level*, Programa Ciencia Abierta, Par Explora RM Norte, Liceo Bicentenario Provincial Santa Teresa de los Andes, Colina, Chile.
- Jul 23rd 2022 **"How to feed baby stars"**, *Public talk, General audience level*, Soapbox Science Munich, Munich, Germany.

- Jul 2018 - **Member of "Cazadoras de Estrellas" Project**, *DIRVEX, Universidad de Chile*,  
Present This outreach project is lead by a group of female graduate students and alumni from the Astronomy Department in Universidad de Chile. The goal is to give high school girls a hands-on experience with astronomical data and meet female astronomers so that they can solve any vocational doubts about this career.
- June 27th 2019 **"Eclipses: Luces y Sombras en el Universo"**, *Public talk, Middle School level*,  
Municipalidad de El Bosque, Santiago, Chile.
- Apr 9th, 2019 **"Astroinformática para principiantes"**, *Public talk, High School level*, DUOC  
UC Puente Alto, Santiago, Chile.
- Mar 21st, 2019 **"Astroinformática para principiantes"**, *Public talk, General Audience level*, Cen-  
tro de Extensión de la Universidad de Talca, Talca, Chile.
- June 2018 - **Scientific Counselor**, *Liceo Polivalente San José de Maipo*, Festival de Teatro y  
Nov 2018 Ciencias (FETYC), Par Explora Sur Oriente, CONICYT.  
The FETYC is a theatre competition organized by the National Commission of Scientific and Technologic Investigation (CONICYT) where several schools prepare a play around a scientific inquiry. The Scientific Counselor guides the scientific content of the plays.
- Mar 2018 - **Tourist Guide**, *National Astronomical Observatory, Departamento de Astronomía*,  
Aug 2018 *Universidad de Chile*.

## Skills and Qualifications

- Languages** English (C1, TOEFL iBT: 113/120), Spanish (Native), German (A2)
- Programming** Python, Java, C, Matlab/Octave, R, IDL
- Astronomy** CASA (Common Astronomy Software Applications), GILDAS suite (mapping, class)
- Version** GitHub (tere-valdivia)
- Controlling Tools**

## Funding and Awards

- Jul 2018 **Adelina Gutierrez Grant**, *Sociedad Chilena de Astronomía*, The grant funded the assistance to the Second Binational AAA-SOCHIAS Meeting.
- Mar 2018 **Scholarship for National Master Studies**, *Comisión Nacional de Investigación en Ciencia y Tecnología (CONICYT), Chile*, The scholarship funds master studies done in chilean universities.

## Service and Leadership

- Apr 2019 - **Graduate Student Representative**, *Departamento de Astronomía*, Universidad de  
Apr 2020 Chile, Santiago, Chile.

## References

- Prof. Dr. Paola Caselli**, *Ph.D in Astrophysics*, Director, Max Planck Institut für Extraterrestrische Physik.  
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- Prof. Mónica Rubio**, *Ph.D in Astrophysics*, Full Professor, Departamento de Astronomía, Universidad de Chile.  
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