

# Valeria Olivares

📍 360 Chem.-Phys. Building University of Kentucky 🏠 [www.valeriaolivares.com](http://www.valeriaolivares.com) ✉ [valeria.olivares@uky.edu](mailto:valeria.olivares@uky.edu)

I am an early career researcher in observational astrophysics who uses multi-wavelength observations to study the life-cycle of gas and AGN feedback of central galaxies in clusters and groups.

## RESEARCH EXPERIENCE AND EMPLOYMENT

2020 – present	<b>Postdoctoral Researcher</b> UNIVERSITY OF KENTUCKY · USA 📍 Multi-wavelength studies of clusters of galaxies
2017 – 2020	<b>Ph.D. student researcher</b> OBSERVATOIRE DE PARIS · France 📍 Thesis: "Unveiling the origin of filamentary structures around central galaxies in groups and cluster"
2014 – 2016	<b>Master in Physics</b> UNIVERSIDAD DE CONCEPCION · Chile 📍 Thesis: "SINFONI observations of high-redshift submillimeter galaxies"
Mar 2010 – Dec 2014	<b>Astronomy dDegree</b> UNIVERSIDAD DE CONCEPCION · Chile 🏛️
Mar 2010 – Dec 2013	<b>Bachelor in Astronomy</b> UNIVERSIDAD DE CONCEPCION · Chile 🏛️

## PROFESSIONAL EXPERIENCE

### Mentoring

**2021 – Current** PhD co-supervisor, University of Kentucky, USA.  
"The formation channels of multiphase gas in nearby early-type galaxies using MUSE and *Chandra* observations"

### Observing

**2022** IRAM 30m telescope, PolyFix, 3 days in remote mode.  
**2017** IRAM 30m telescope, PolyFix, 2 nights in remote mode.  
**2016** Australia Telescope National Facility, Australia Telescope Compact Array (ACTA), 12 nights (onsite).  
**2015** Atacama Pathfinder EXperiment (APEX) telescope, bolometer arrays (LABOCA), 10 days (onsite).

### Granted Observing Proposals

**2023** 25800027/2023, Chandra, 200.00ks (co-PI)  
**2023** 25800020/2021, Chandra, 125.00ks (co-PI)  
**2023** 112.25KS.001/112-A/2023, VLT, MUSE, 5 hrs (PI)  
**2023** 112.25JS.001/112-A/2023, VLT, MUSE, 6 hrs (PI)  
**2022** 110.2405.001/110-A/2022, VLT, MUSE, 20 hrs (PI)  
**2022** 084-22/winter/2022, IRAM30m, 24 hrs, grade B (co-PI)  
**2022** 030-22/summer/2022, IRAM30m, 11.5 hrs, grade A (PI)  
**2022** 2022.101488.S/cycle9/2022, ALMA, 10 hrs, grade A (PI)  
**2021** 2021.101626.S/cycle8/2021, ALMA, ACA, 7 hrs, grade B (co-PI)  
**2021** 2021.100776.S/cycle8/2021, ALMA+ACA, 23 hrs, grade B (PI)  
**2021** 23800288/2021, Chandra, 115.00ks (co-PI)  
**2021** 090162/2021, XMM-Newton 155ks (co-PI)  
**2020** 088208/2020, XMM-Newton, 65ks (co-PI)  
**2020** S20BD/Summer/2020, IRAM 30m, PolyFiX, 25.6 hours (co-PI)  
**2019** 2019.2.00122.S/cycle 7/2019, ALMA, ACA instrument, 22.5 hrs (co-PI)  
**2019** 2019.1.01665.S/cycle 7/2019, ALMA, 23 hrs no observed (co-PI)  
**2019** 193-19/Winter/2019, IRAM 30m, PolyFiX, 13 hrs (co-PI)  
**2019** 065-19/Summer/2019, IRAM 30m, PolyFiX, 25 hrs (co-PI)  
**2019** 0102.A-0442/102-A/2019, VLT, MUSE, 8 hrs. (co-PI)

## Astronomical Techniques

<b>Chandra</b>	Imaging and spectra analysis using CIAO, PyXSPEC and Sherpa
<b>ALMA</b>	Calibration and analysis using various versions of CASA.
<b>Disk modeling</b>	Using <sup>3D</sup> Barolo.
<b>NOEMA/IRAM</b>	Calibration and analysis using various using Gildas (MAPPING and CLASS).
<b>MUSE/SINFONI</b>	Data reduction and analysis using various ESOREX, PpXF, Platefit, & ZAP.
<b>JVLA</b>	Data calibration of 3GHz (S-Band) continuum survey (1 pointing, 190 hrs of data), using the JVLA pipeline, CASA and Python.

## Computer Skills

<b>Languages</b>	Python, IDL/GDL, Cluster computing, LATEX
<b>Operating systems</b>	GNU/Linux, MacOS

## Journal referee

Referee of the Astrophysical Journal (ApJ)  
Referee of the Astronomy & Astrophysics (A&A) journal  
Referee of ESO proposals  
Referee of ALMA proposals  
Referee of the IRAM conference proceedings of 2022

## Memberships/Collaborations

Member of the American Astronomical Society  
Member of the LYRICS collaboration  
Member of the CLoGS collaboration  
Member of the Antlia collaboration  
**2014 – 2016** Former member of Astronomical Outreach Team (E.D.A), Department of Astronomy, University of Concepcion

## Workshop and Training

<b>10/2021 - 11/2022</b>	<b>Training: "Postdoc Mentoring Training"</b> / University of Kentucky, US Comments: Program designed to guide postdocs through some of the challenges and concerns that mentees and mentors encounter in mentoring relationships
<b>10/2018</b>	<b>Training: "10th IRAM millimeter interferometry school"</b> / Grenoble, FR " Comments: Workshop to acquire a knowledge of interferometry and data reduction techniques at millimeter wavelengths, with a emphasis on the NOEMA interferometer and its new capabilities
<b>02/2016 - 02/2017</b>	<b>Science visit: Leiden Observatory</b> , NL Comment: Research collaboration to develop a pipeline to do the data reduction and calibration of ~200 hours of S-Band JVLA data (one pointing)
<b>06/2016</b>	<b>Training: "15th Synthesis Imaging Workshop"</b> / NRAO and New Mexico Institute of Mining and Technology, Socorro, US Comments: The workshop comprised of a week of lectures on aperture synthesis theory and techniques.
<b>10/2016</b>	<b>Training - "NOVA fall School"</b> / Netherlands Institute for Radio Astronomy (ASTRON), NL
<b>09/2015</b>	<b>Training: "Third La Serena School of Data Science"</b> / AURA Campus, Chile. Workshop focused on applied tools for handling big astronomical data. At the end of the workshop a short science project was done : Looking for supermassive black hole binaries in CRTS data.

## Teaching

<b>2015 – 2015</b>	Teaching Assistant for Software and Astronomical data Analysis Classes Universidad de Concepción The responsibilities include creating and teaching tutorials, grading assignments, and occasionally giving lectures.
<b>2014 – 2014</b>	Teaching Assistant for Programming Classes Universidad de Concepción The responsibilities include creating and teaching tutorials, grading assignments, and occasionally giving lectures.
<b>2013 – 2013</b>	Teaching Assistant for Stellar Astrophysics Classes Universidad de Concepción The responsibilities include creating and teaching tutorials, and occasionally giving lectures.

## Outreach

<b>2023</b>	Speaker at the "Festival de la Astronomia" University of Kentucky, US Talk to more than 100 school students of underrepresented background.
<b>2023</b>	Speaker at the "Full STEM Ahead: Solar Telescopes" Astronomy talk to kids of underrepresented background at the Public Library Lexington, US
<b>2014 – 2016</b>	Advisor at the "Astronomical School Congress" Universidad de Concepción (Conicyt Project) Role: Tutor for the participants from elementary and middle schools for 7 scholar projects every year.
<b>2016</b>	Tutor at the "Astronomical School for Professors" Universidad de Concepción (Conicyt project) Role: Lectures for professors from middle and high schools.
<b>2014 – 2016</b>	Various outreach activities and lectures with elementary and middle school students as part of the E.D.A outreach team

## AWARDS & GRANTS

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**2022** NRAO Student Observing Support (SOS) Program fellowship for my PhD student (scientific PI)  
**2021 – 2024** NSF grant (co-PI) 278,074 USD Collaborative Research:  
A Systematic and Comprehensive Study of Black Hole-Driven Turbulence in Massive Galactic Systems, n. 2107711.  
**2020** IAU travel grant / 500 EUR, awarded to participate of the IAU Symposium 359  
**2017 – 2020** IEcole Doctorale Astronomie & Astrophysique d'Ile-de-France (ED 127)  
52,92 OEUR, for doctoral studies, FR (Awarded one of 18 French fellowships)  
**2018** Ecole Doctorale de Paris travel funding / 500 EUR, for attending Interferometry School, FR  
**2016** Leids Kerkhoven-Bosscha Fonds (LKBF) (Netherlands) / 1,000 EUR, for attending 15th Synthesis Imaging Workshop, US  
**2016** "Premio Universidad de Concepcion" for Academic Excellence / Universidad de Concepcion  
**2014 – 2015** Fellowship for Master Studies / 15,000 USD, Universidad de Concepcion

## CONTRIBUTED AND INVITED TALKS

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**08/2023** A journey through galactic environments, Porto Ercole, Italy (Contributed talk, to come)  
**05/2023** Midwest Magnetic Fields Workshop 2023 (Contributed talk, online)  
**04/2023** KAAS meeting, University of Kentucky (Contributed talk)  
**02/2023** Astronomy seminar, University of Michigan (Invited Seminar)  
**02/2023** IFPU workshop: on complex dynamical systems in astrophysics, Trieste, IT (Invited seminar talk)  
**01/2023** AAS241 meeting, Seattle, US (Contributed talk)  
**12/2022** Multi-phase, Multi-temperature and Complex: how AGN feedback shapes the nature of the circum-galactic and halo gas in galaxy groups (ESO Garching) (Contributed talk)  
**07/2022** NAM2022, UK (via zoom) (Invited talk)  
**06/2022** AAS240 meeting, Pasadena, US (Invited conference press talk)  
**06/2022** AAS240 meeting, Pasadena, US (Contributed talk)  
**06/2022** Multiphase AGN Feeding & Feedback II, Sesto, IT (Invited talk)  
**04/2022** LYRICS meeting, Paris, FR (Seminar talk)  
**04/2022** Multi-line Diagnostics of the Interstellar Medium, Nice, FR (Contributed talk)  
**03/2022** Large-Volume Spectroscopic Analysis and Star-forming galaxies in the Era of JWST workshop (Via zoom) (Poster talk)  
**01/2022** XVII SOCHIAS Meeting, Santiago, CL (via zoom) (Contributed talk)  
**11/2021** The 1st KIAA Forum on Gas in Galaxies for Early Career Scientists, China (via zoom) (Contributed talk)  
**11/2021** KAS 2021 Annual Meeting, Kentucky, USA (via zoom) (Contributed talk)  
**06/2021** Galaxy Cluster Formation II, ESO, Germany (via zoom) (Poster talk)  
**04/2021** Kentucky Area Astronomical Society (KAAS) meeting, USA (via zoom) (Contributed talk)  
**01/2021** Astronomy seminar, University of Kentucky, USA (via zoom) (Invited seminar)  
**09/2020** Galaxy Cluster group meeting, CfA, USA (via Zoom) (Invited seminar)  
**03/2020** Galaxy Journal Club, Institut d'Astrophysique de Paris (IAP), FR (Invited talk)  
**03/2020** IAU Symposium 359, Bento Gonçalves, BR (Contributed talk & poster presentation)  
**07/2019** Tracing Cosmic Evolution with Clusters of Galaxies, Sesto, IT (Contributed talk)  
**06/2019** EWASS 2019 symposium, Lyon, FR (Contributed talk)  
**10/2018** IRAM Interferometry School 2018, Grenoble, FR (Poster talk)  
**09/2018** 48th YERAC Young European Radio Astronomers Conference, ASTRON, NL (Contributed talk)  
**05/2017** Paris Observatory, FR (Invited seminar)  
**10/2016** NOVA fall School for Astronomy, ASTRON, NL (Contributed talk)  
**10/2015** Lunch Talk, Leiden Observatory, NL (Invited seminar)  
**07/2015** Galaxy Evolution Group, Universidad de Concepción, CL (Invited talk)  
**03/2015** Unveiling the AGN/Galaxy Evolution Connection 2015, Puerto Varas, CL (Poster talk)

## PRESS RELEASES

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**06/2022** "Black Hole Activity not Evolving in Central Cluster Galaxies" – Press conference at the AAS 240 meeting in California, US.)  
[from University of Kentucky](#), [from News Wise](#), and [from Astrobites](#)

## REFERENCES

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<b>Prof. Yuanyuan Su</b>	University of Kentucky / <a href="mailto:yuanyuan.su@uky.edu">yuanyuan.su@uky.edu</a>
<b>Prof. Philippe Salome</b>	Paris Observatoire / <a href="mailto:philippe.salome@obspm.fr">philippe.salome@obspm.fr</a>
<b>Prof. Françoise Combes</b>	Paris Observatoire / <a href="mailto:francoise.combes@obspm.fr">francoise.combes@obspm.fr</a>
<b>Dr. Massimo Gaspari</b>	Princeton University / <a href="mailto:astro.princeton.edu">astro.princeton.edu</a>
<b>Dr. Stephen Hamer</b>	University of Bath / <a href="mailto:S.L.Hamer@bath.ac.uk">S.L.Hamer@bath.ac.uk</a>

- 2023+submitted** "H $\alpha$  and X-ray Surface Brightness Correlation of Filaments in Cooling Flow Clusters."  
**Valeria Olivares**, Adrien Picquenot, Yuanyuan Su, Marie-Lou Gendron-Marsolais, Fiorella L. Polles, Massimo Gaspari, Paul Nulsen, **Submitted to Nature Astronomy** <https://doi.org/10.21203/rs.3.rs-3117255/v1>
- 2023+accepted** "The formation channels of multiphase gas in nearby early-type galaxies."  
Ryan Eskenasy, **Valeria Olivares**, Yuanyuan Su, Yuan Li, Accepted for publication in MNRAS
- 2023+accepted** "The chemical and thermal properties of a cool core lacking a brightest cluster galaxy."  
Y. Su, F. Combes, **V. Olivares**, G. Castagnani, P. Torne, R. Weeren, Accepted for publication in MNRAS
- 2023+in press** "X-ray Cavity Dynamics and their Role in the Gas Precipitation in Planck Sunyaev–Zeldovich (SZ) Selected Clusters."  
**V. Olivares**, Y. Su, W. Forman, M. Gaspari, F. Andrade-Santos, P. Salome, P. Nulsen, A. Edge, F. Combes, and C. Jones, 2023, Accepted for publication in ApJ (in press) <https://ui.adsabs.harvard.edu/abs/2023arXiv230609829O>
- 2023** "Waking the monster: the onset of AGN feedback in galaxy clusters hosting young central radio galaxies."  
F. Ubertosi, M. Gitti, F. Brighenti, **V. Olivares**, E. O'Sullivan, and G. Schellenberge, 2023, A&A, 673A, 52U <https://doi.org/10.1051/0004-6361/202345894>
- 2023** "Turbulence Traced with Multiphase Filaments in the Centers of Galaxy Clusters."  
Ganguly, Shalini; Li, Yuan, **Olivares, Valeria**; Su, Yuanyuan; Combes, Francoise; Prakash, Sampadaa; Hamer, Stephen; Guillard, Pierre; Ha, Trung, 2023, FrASS.1038613G <https://doi.org/10.3389/fspas.2023.1138613>
- 2022** "AGN feedback duty cycle in Planck SZ selected clusters using Chandra observations."  
**V. Olivares**, Y. Su, P. Nulsen, R. Kraft, T. Somboonpanyakul, F. Andrade-Santos, C. Jones, W. Forman, 2022 MNRAS 516L 101O <https://doi.org/10.1093/mnrasl/slac096>
- 2022** "Merger histories of brightest group galaxies from MUSE stellar kinematics."  
I. Loubser, P. Lagos, A. Babul, E. O'Sullivan, S. L. Jung, **V. Olivares**, and K. Kolokythas, 2022 MNRAS, 515 1104L <https://doi.org/10.1093/mnras/stac1781>
- 2022** "Spatially-resolved properties of early-type group-dominant galaxies: gas content, ionisation mechanisms and metallicity gradients."  
Lagos, P.; Loubser, S. I.; Scott, T. C.; O'Sullivan, E.; Kolokythas, K.; Babul, A.; Nigoche-Netro, A.; **Olivares, V**; Sengupta, C, 2022, MNRAS 516 5487L <https://academic.oup.com/mnras/article/516/4/5487/6694265>
- 2022** "AGN jets do not prevent the suppression of conduction by the heat buoyancy instability in simulated galaxy clusters."  
Beckmann, Ricarda S., Dubois, Yohan, Pellissier, Alisson, Polles, Fiorella L., **Olivares, Valeria**, 2022 A&A 666A 71B <https://doi.org/10.1051/0004-6361/202243873>
- 2022** "Cosmic rays and thermal instability in self-regulating cooling flows of massive galaxy clusters."  
Ricarda S. Beckmann, Yohan Dubois, Alisson Pellissier-Michel, **Valeria Olivares**, Fiorella L. Polles, Pierre Guillard, and Matthew D. Lehnert, 2022 A&A 665A, 129B <https://doi.org/10.1051/0004-6361/202142527>
- 2022** "Gas condensation in brightest group galaxies unveiled with MUSE. Morphology and kinematics of the ionized gas."  
**V. Olivares**, P. Salome, S. L. Hamer, F. Combes, P. Guillard, R. S. Beckmann, M. D. Lehnert, O'Sullivan, R. Canning, F. L. Polles, et al., A&A, 666, A94 <https://doi.org/10.1051/0004-6361/202142475>
- 2021** "Excitation mechanisms in the intracluster filaments around the Brightest Cluster Galaxies."  
F. L. Polles, P. Salome, F. Combes, P. Guillard, G. Pineau des Forets, **V. Olivares**, R. S. Beckmann, M. D. Lehnert, S. L. Hamer, R. Canning, F. Combes, Y. Dubois, A. C. Edge, A. C. Fabian, G. J. Ferland, S. L. Hamer, and M. D. Lehnert, et al. 2021, A&A, 651A, 13P <https://doi.org/10.1051/0004-6361/202039730>

- 2019** "Dense gas formation and destruction in a simulated Perseus-like galaxy cluster with spin-driven black hole feedback."  
R. S. Beckmann, Y. Dubois, P. Guillard, P. Salome, **V. Olivares**, F. Polles, C. Cadiou, F. Combes, S. Hamer, M. D. Lehnert, and G. Pineau des Forets. 2019, A&A, A60, 631 <http://doi.org/10.1051/0004-6361/201936188>
- 2019** "Ubiquitous cold and massive filaments in cool core clusters."  
**V. Olivares**, P. Salome, F. Combes, S. Hamer, P. Guillard, M. D. Lehnert, F. Polles, R. S. Beckmann, Y. Dubois, M. Donahue, A. Edge, A. C. Fabian, B. McNamara, T. Rose, H. Russell, G. Tremblay, A. Vantyghem, R. E. A. Canning, G. Ferland, B. Godard, M. Hogan, S. Peirani, G. Pineau des Forets. 2019, A&A, A22, 631 <http://doi.org/10.1051/0004-6361/201935350>
- 2019** "Driving massive molecular gas flows in central cluster galaxies with AGN feedback."  
H. R. Russell, B. R. McNamara, A. C. Fabian, P. E. J. Nulsen, F. Combes, A. C. Edge, M. Madar, **V. Olivares**, P. Salome, A. N. Vantyghem. 2019, MNRAS, 490, 3025R <http://10.1093/mnras/stz2719>
- 2019** "Discovery of a diffuse optical line emitting halo in the core of the Centaurus cluster of galaxies: Line emission outside the protection of the filaments."  
S. L. Hamer, A. C. Fabian, H. R. Russell, P. Salome, F. Combes, **V. Olivares**, F. L. Polles, A. C. Edge, R. S. Beckmann. 2019, MNRAS, 483 <http://doi.org/10.1093/mnras/sty3459>
- 2018** "Cold gas in a complete sample of group-dominant early-type galaxies?"  
E. OSullivan, F. Combes, P. Salomé, L. P. David, A. Babul, J. M. Vrtilek, **V. Olivares**, S. Raychaudhury, G. Schellenberger. 2018, A&A, A126, 618 <http://doi.org/10.1051/0004-6361/201833580>
- 2016** "Spatially Resolved Spectroscopy of Sub-mm Galaxies at  $z \simeq 2$  "  
**V. Olivares**, E. Treister, G. Privon, S. Alaghband-Zadeh, C. Casey, S. Chapman, K. Schawinski, A. M. Swinbank, I. Smail, E. Gawiser, P. Kurczynski, N. Nagar, F. Bauer. 2016, ApJ, 827,570 <http://doi.org/10.3847/0004-637X/827/1/57>

## CONFERENCE PROCEEDINGS

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- 2022** "Gas condensation in Brightest Group Galaxies unveiled with MUSE"  
**V. Olivares**, 2022, Multi-line Diagnostics of the Interstellar Medium, Nice, France, Edited by Bouscasse, L.; Kramer, C.; Gueth, F.; EPJ Web of Conferences, Volume 265, id.00015  
<https://10.1051/epjconf/202226500015>
- 2021** "Ubiquitous cold and massive filaments in brightest cluster galaxies"  
**V. Olivares**, P. Salome, 2021, Galaxy Evolution and Feedback across Different Environments. Proceedings of the International Astronomical Union, Volume 359, pp. 182-184  
<https://10.1017/S1743921320002355>