

Daniel E. Hernández Lang

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Academic degrees

- PhD in Astronomy, Ludwig-Maximilians-Universität, February 2020 - Ongoing.
 - Master in Astronomy, Universidad de La Serena, 2016 - 2019.
 - Bachelor degree in Physics, mention Astronomy, Universidad de La Serena, 2012 - 2016.
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Academic Experience

- Undergraduate teaching assistant of “Teoría Electromagnética” (Electromagnetic Theory) under the direction of Dr. Carlos López at the Universidad de La Serena, 2015.
 - Undergraduate teaching assistant of “Ondas” (Waves) under the direction of Dr. José Nilo at the Universidad de La Serena, 2015.
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Schools and/or Conferences

Attendant

- LOC/Attendant at the PUNCH4NFDI Meeting, Munich, Germany, 2023.
- Attendant at the eROSITA Cluster Working Group Face2Face meeting, Online, 2020.
- Attendant at the eROSITA_DE Consortium meeting, Online, 2020.
- LOC/Attendant at the Second Binational Meeting AAA-SOCHIAS, La Serena, Chile 2018.
- Attendant at the La Serena School for Data Science: Applied Tools for Data-driven Sciences, La Serena, Chile 2018.
- Attendant at the Second Chilean Gemini Users Meeting & Workshop, Universidad de La Serena, La Serena, Chile 2017.
- Attendant at the Astronomy School on Photometric Redshift, Universidad de La Serena, La Serena, Chile 2017.
- Attendant at the Machine Learning ULS2017 mini-workshop, Universidad de La Serena, La Serena, Chile 2017.
- Attendant at the annual congress of the Sociedad Chilena de Astronomía (SOCHIAS), Antofagasta, Chile 2016.
- Attendant at the LSST Workshop, La Serena, Chile, 2015
- Attendant at the Workshop of Metamaterials, Universidad de La Serena, La Serena, Chile 2014.
- Attendant at the annual congress of the Sociedad Chilena de Astronomía (SOCHIAS), Viña del mar, Chile 2012.
- Attendant and receptionist at the biennial congress of the Sociedad Chilena de Física (SOCHIFI), La Serena, Chile 2012.

Talks

- “Dynamical analysis of the merging galaxy cluster SPT-CL 0307-6225” - 15th IMPRS Symposium, Germany, 2023.
- “Optical confirmation of low S/N *Planck* galaxy clusters” - DES Collaboration Meeting, Portsmouth, England, 2023.
- “Optical confirmation of *Planck* galaxy clusters” - Origins PhD days 2022, Kufstein, Austria, 2022.
- “Galaxy population in SPT galaxy clusters: the impact of cluster mergers” - Science Day of the ORIGINS Excellence Cluster, Munich, Germany, 2021.
- “Optical confirmation of *Planck* galaxy clusters” - 10th IMPRS Symposium, Munich, Germany, 2020.
- “Galaxy populations in merging clusters” (lightning talk) - eROSITA CWG Face2Face meeting, Online, 2020.
- “Galaxy evolution in merging galaxy clusters” - Gemini, Aura, Chile, 2019.
- “Merging galaxy clusters: The case of Abell 267” - MPA-ULS Workshop, La Serena, Chile, 2019.
- “Characterization and dynamics of merging galaxy clusters” - IMPRS Recruitment Workshop, Munich, Germany, 2019.
- “Dynamical State Classification and Galaxy Populations in SPT Clusters: The case of SPT-CLJ0307-6225” - DES Collaboration Meeting, Campinas, Brazil, 2018.

Posters

- “A MUSE dynamical study of the cluster merger SPT-CL J0307-6225” - Galaxy Cluster Formation II, Online, 2021.
- “PyGFIRM: A new software for galaxy morphology” - Galaxy Groups and Clusters II, La Serena, Chile 2017.
- “Vicuña and the Falcon Telescope Network: The first light project” - Annual congress of the Sociedad Chilena de Astronomía (SOCHIAS), Maitencillo, Chile, 2017.

Scientific Experience

Research Experience

- Dark Energy Survey (DES) member, 2018 - to present.
- DECam Local Volume Exploration (DELVE) survey builder, 2021 - to present.
- eROSITA member, 2019 - 2021.
- Research assistant at AURA under the supervision of Dr. Rodrigo Carrasco, April 2019 - July 2019.
- Research assistant at AURA under the supervision of Dr. Alfredo Zenteno, November 2017 - December 2018.
- Utilization of supervised learning for the classification of lymphomas using AlexNet, at La Serena School for Data Science, August 2018.

Observational Experience

- Observation planning of the DeROSITAS survey, 2018 - 2021.
- In-situ and remote observations with the DECam instrument at the BLANCO 4m telescope, CTIO, AURA, of the DeROSITAS survey, under the programs 2018-0386A and 2019A-0272 (PI: Zenteno, A.), 2018 - 2019.
- Mask creation and data reduction of spectroscopic data taken with the GMOS-S MOS instrument, Gemini, for the program GS2018B-Q-233 (PI: Zenteno, A.), 2018 - 2019.

Proposals

- Co-I on accepted proposal with the Hubble Space Telescope, STScI, “*Clash of Titans: Characterizing SPT-CLJ0307-6225, a major merger in the plane of the sky*” (PI: Zenteno, A.), 2022.
- Co-I on accepted proposal with the GMOS-S MOS instrument, Gemini, “*A dynamical study of massive galaxy clusters at $z > 0.6$ undergoing extreme mergers*” (PI: Carrasco, R.; PROGRAM IDS: GS-2022B-Q-317, GS-2022B-Q-127), 2022.
- Co-I on accepted proposals with the DECam instrument at the BLANCO telescope, CTIO, “*The DECam eROSITA Survey (DeROSITAS)*” (PI: Zenteno, A.; PROGRAM IDS: 2019A-0272, 2019B-0323, 2020A-0399, 2020B-0241, 2021A-0149), 2019 - 2021.
- Co-I on accepted proposal with the GMOS-S MOS instrument, Gemini, “*Witnessing the formation of the large-scale structure: a dynamical study of massive galaxy clusters undergoing extreme mergers*” (PI: Monteiro-Oliveira, R.; PROGRAM ID: GS-2021B-Q-302), 2021.
- Co-I on accepted proposal with the GMOS-S MOS instrument, Gemini, “*Clash of Titans: a dynamical study of a sample of massive galaxy clusters undergoing extreme mergers*” (PI: Zenteno, A.; PROGRAM IDS: GS-2020B-Q-235, GS-2020B-Q-131), 2020.
- Co-I on accepted proposal with the GMOS-S MOS instrument, Gemini, “*Clash of Titans: a dynamical study of a sample of massive galaxy clusters undergoing extreme mergers*” (PI: Zenteno, A.; PROGRAM ID: GS2018B-Q-233), 2018.

Others

- In charge of operations and softwares development at the FALCON-MMO Telescope, January 2017 - April 2017.
- Outreach activities coordinator of the FALCON-MMO project, March 2016 - December 2016.

Languages:

- Spanish: Native language.
- English: Proficient.
- German: Basic.

Skills

- Advance knowledge: Python, L^AT_EX, Bash.
 - Softwares: THELI, SExtractor, SourceExtractor++, PSFex, IRAF, GALFIT, TOPCAT, GMMPS, Aladin, DS9.
 - Databases: SMOKA (Subaru Mitaka Okayama Kiso Archive) system, SDSS SkyServer & PAN-STARRS - CasJobs, DES Easyaccess Web.
 - Operative Systems: Windows, Linux (Ubuntu and Debian), MacOS.
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Publications

First Author

- **Hernández-Lang, D.**, et al. - *The PSZ-MCMF catalogue of Planck clusters over the DES region*, MNRAS 525, 24-43, doi:10.1093/mnras/stad2319, 2023
- **Hernández-Lang, D.**, et al. - *Clash of Titans: a MUSE dynamical study of the extreme cluster merger SPT-CL J0307-6225*, MNRAS 517, 4355-4378, doi:10.1093/mnras/stac2480, 2022

Contributing Author

- Lima-Dias, C., Monachesi, A., Torres-Flores, S., Cortesi, A., **Hernández-Lang, D.**, et al. - *Bulge-disc decomposition of the Hydra cluster galaxies in 12 bands*, MNRAS 527, 5792-5807, 10.1093/mnras/stad3571, 2024
- Klein, M., **Hernández-Lang, D.**, et al. - *RASS-MCMF: a full-sky X-ray selected galaxy cluster catalogue*, MNRAS 526, 3757-3778, 10.1093/mnras/stad2729, 2023
- Franklin Aldás, Alfredo Zenteno, Facundo Gómez, **Daniel Hernandez-Lang**, et al. - *Clash of Titans: the impact of cluster mergers in the galaxy cluster red sequence*, MNRAS 525, 1769-1778, 10.1093/mnras/stad2261, 2023
- Lima-Dias, C., Monachesi, A., Torres-Flores, S., Cortesi, A., **Hernández-Lang, D.**, et al. - *An environmental dependence of the physical and structural properties in the Hydra cluster galaxies*, MNRAS 500, 1323–1339, doi:10.1093/mnras/staa3326, 2021
- Zenteno, A., **Hernández, D.**, et al. - *A joint SZ-Xray-optical analysis of the dynamical state of 288 massive galaxy clusters*, MNRAS 495, 705–725, doi:10.1093/mnras/staa1157, 2020
- E. J. Gonzalez, M. de los Rios, G. A. Oio, **D. Hernández Lang**, et al. - *Analysis of candidates for interacting galaxy clusters*, A&A 611, doi:10.1051/0004-6361/201732003, 2018

Nth Author

- Kluge, M, et al. (including **Hernández-Lang**) - *The First SRG/eROSITA All-Sky Survey: Optical Identification and Properties of Galaxy Clusters and Groups in the Western Galactic Hemisphere*, Submitted to A&A, 2024
- Cerny, W., et al. (including **Hernández-Lang**) - *Pegasus IV: Discovery and Spectroscopic Confirmation of an Ultra-Faint Dwarf Galaxy in the Constellation Pegasus*, ApJ 942 111, doi:10.3847/1538-4357/aca1c3, 2023
- Euclid Collaboration, et al. (including **Hernández-Lang**) - *Euclid preparation XXVI: The Euclid Morphology Challenge. Towards structural parameters for billions of galaxies*, Euclid pre-launch key paper, 2022
- Euclid Collaboration, et al. (including **Hernández-Lang**) - *Euclid preparation. XXV. The Euclid Morphology Challenge – Towards model-fitting photometry for billions of galaxies*, Euclid pre-launch key paper, 2022
- Drlica-Wagner, A., et al. (including **Hernández-Lang**) - *The DECam Local Volume Exploration Survey Data Release 2*, ApJS 261 38, doi:10.3847/1538-4365/ac78eb, 2022
- Cerny, W., et al. (including **Hernández-Lang**) - *Eridanus IV: an Ultra-faint Dwarf Galaxy Candidate Discovered in the DECam Local Volume Exploration Survey*, ApJL 920 L44, doi:10.3847/2041-8213/ac2d9a, 2021
- Drlica-Wagner, A., et al. (including **Hernández-Lang**) - *The DECam Local Volume Exploration Survey: Overview and First Data Release*, ApJS 256 2, doi:10.3847/1538-4365/ac079d, 2021
- Reiprich, T. H., et al. (including **Hernández-Lang**) - *The Abell 3391/95 galaxy cluster system. A 15 Mpc intergalactic medium emission filament, a warm gas bridge, infalling matter clumps, and (re-) accelerated plasma discovered by combining SRG/eROSITA data with ASKAP/EMU and DECam data*, A&A 647, A2, doi:10.1051/0004-6361/202039590, 2021
- Mau, S., et al. (including **Hernández-Lang**) - *Two Ultra-faint Milky Way Stellar Systems Discovered in Early Data from the DECam Local Volume Exploration Survey*, ApJ 890 136, doi:10.3847/1538-4357/ab6c67, 2020