Rafael Martínez-Galarza

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Education

⋆ 2012: **PhD in Astronomy** at Leiden University, The Netherlands with the thesis: *Mid-infrared spectroscopy of starbursts : from Spitzer-IRS to JWST-MIRI.* **Calibration of the MIRI instrument within the European Consortium**. Advisor: Prof. B. Brandl, Prof. Ewine van Dishoeck

Address: Leiden University, Leiden Observatory, Niels Bohrweg 2. 2333 CA. Leiden, The Netherlands

⋆ 2007: **M.S. in Astronomy** at Leiden University, The Netherlands with the thesis: *Star Formation in the ρ Ophiuchus Molecular Cloud.* Advisor: Prof. M. Hogerheijde

Address: Leiden University, Leiden Observatory, Niels Bohrweg 2. 2333 CA. Leiden, The Netherlands

⋆ 2005: **B.S. in Physics** at Universidad Nacional de Colombia, Colombia, with the thesis: *High Resolution Spectroscopy of Chemically Peculiar Stars.* Advisors: Dr. Inga Kamp, Prof. Benjamin Calvo

Address: Universidad Nacional de Colombia, Carrera 30, Calle 45. Bogotá, D.C., Colombia

Employment record

⋆ September 2024-present: Deputy Director and lead of the Multimodal LLM group (*AstroAI*) at the Center for Astrophysics | Harvard & Smithsonian (Cambridge MA, US)

Address: 60 Garden St., Cambridge (MA) 02138, US (+1 617 495-7461)

⋆ September 2017-September 2024: Astrophysicist (*Deputy End-to-end Scientist for the Chandra X-ray Center Data Systems*) at the Center for Astrophysics | Harvard & Smithsonian (Cambridge MA, US)

Address: 60 Garden St., Cambridge (MA) 02138, US (+1 617 495-7461)

⋆ 2012-2017: Postdoctoral fellow at the Center for Astrophysics | Harvard & Smithsonian (Cambridge MA, USA) - Supervisor: Dr. H. Smith

Address: 60 Garden St., Cambridge (MA) 02138, US (+1 617 495-7461)

⋆ 2015-2017: Lead Teaching Fellow at the Insitute for Applied Computational Science, Harvard University (Cambridge, MA) - Supervisor: Dr. P. Protopapas

Address: Harvard School of Engineering and Applied Sciences, Maxwell Dworkin, Suite G107, 33 Oxford Street, Cambridge, MA 02138 - U.S.A (+1 617 495-3903)

⋆ 2007-2012: Promovendus (PhD researcher) and teaching assistant at the Leiden Observatory, the Netherlands - Supervisor: Prof. B. Brandl.

Address: Leiden University, Leiden Observatory, Niels Bohrweg 2. 2333 CA. Leiden, The Netherlands

⋆ 2004-2005: Research assistant at the Space Telescope Science Institute (STScI), Baltimore, MD - Supervisor: Prof. I. Kamp.

Address: Space Telescope Science Institute, 3700, San Martin Dr., Baltimore, MD 21218.

Grants awarded

⋆ **2024** AstroMind private Donation, Co-P.I.: *Physical LLM.* (2 year program. 750,000 USD)

⋆ **2024** NASA Astrophysics Decadal Survey Precursor Science Program, P.I.: *Statistical and Data-Driven Solutions to Pileup in Detectors for X-ray Astronomy.* (3 year program. 750,000 USD)

⋆ **2022-2023** SAO IR&D Grant, P.I.: *An Operational Cloud-based Prototype of the Cfa Nexus: Implementation of Multi-wavelength Use Cases* (2 year program. 65,000 USD)

- ⋆ **2023** JWST Cycle 2 GO Program, U.S. Admin P.I.: *Evolution of protoplanetary disks and early stellar evolution in starburst: A NIRCam and MIRI observation of the young starburst cluster Westerlund 2* (2 year program. 238,000 USD, science P.I. Guarcello)
- ⋆ **2023** NASA ADAP subcontract with U. of Washington U.S. Admin P.I.: *A Data-Driven Emulator of Pile-Up for X-Ray Observatories* (2 year program. 115,000 USD, science P.I. Huppenkothen)
- ⋆ **2020** NASA's Chandra Cycle 22, P.I.: *Machine Learning Discovery of X-Ray Transients in the Chandra Source Catalog 2.0* (1 year program. 60,000 USD)
- ⋆ **2019** NASA's Chandra Cycle 21, Co-I: *Star Formation in Starbursts: A Deep ACIS-I Observation of Westerlund 1*, P.I.: Guarcello (2 years program. 126,000 USD)
- ⋆ **2014** International Astronomical Union - Astronomy for Development. P.I.: *Astronomy teaching in Colombia* (1 year program. 5,000 USD)
- ⋆ **2014** NASA - ADAP14-0145, Co-I: *The Physical and Chemical Conditions in Luminous Galaxies* (2.5 years program. 300,000 USD)
- ⋆ **2013** NASA - ADAP13-65, Co-I: *The Evolving Physical Processes in Interacting Galaxies Traced by Their Spectral Energy Distributions* (2.0 years program, 20,0000 USD)

Awards and distinctions

- ⋆ NASA 2020 Agency-level Group Achievement Honor Award - Chandra Source Catalog 2.0
- ⋆ ESA 2012 Significant Achievement Award - Contributions to the JWST-MIRI instrument.

Refereeing and Panel Activities

- ⋆ Member of PhD committee: "Deep learning for Extragalactic Astronomy", by John Morales. Texas Tech University, 2025.
- ⋆ Member of PhD committee: "Classifying X-ray Sources with Machine Learning and Searching for Compact Objects", by Hui Yang. George Washington University, 2024.
- ⋆ Panel Reviewer for The CfA Clay Postdoctoral Fellowship, 2023, 2024.
- ⋆ Panel Reviewer for TESS Cycle 6 Proposals, 2023.
- ⋆ Panel Reviewer for NSF's CAREER Solicitation in Astronomy, 2022.
- ⋆ 2015: Peer review panelist for the Astrophysics Data Analysis Program (ADAP).
- ⋆ 2017: Reviewer for the National Fellowships Committee for Graduate Women in Science.
- ⋆ Referee for MNRAS paper "The STATiX pipeline for the detection of X-ray transients in three dimensions", by Ruiz et al., 2023.
- ⋆ Referee for ApJS paper "Preparing to discover the unknown with Rubin LSST - I: Time domain", by Li et al., 2021.
- ⋆ Referee for A&A paper "The XMM-Newton serendipitous survey. X. The second source catalogue from overlapping XMM-Newton observations and its long-term variable content", by Traulsen et al., 2020.
- ⋆ Referee for the JOAA paper "Classification of Variable Stars Light Curves using Long Short Term Memory Network", 2020.
- ⋆ 2020: Reviewer for NASA's Chandra Cycle 22 Call for Observation proposals - Black Hole and Neutron Star Binaries.
- ⋆ Referee for Nature Astronomy paper "LMC-N79: Discovery of the once and future 30 Doradus", by Ochsendorf et al. 2017

Professional Service

- ⋆ 2024-date: Member of the Steering Committee of the Habitable Worlds Observatory (HWO) AI/ML Working Group.
- ⋆ 2023-date: Member of the CfA Council.
- ⋆ 2023-date: Member of the IVOA Technical Coordination Group, and Chair of the IVOA Time-Domain Interest Group.
- ⋆ 2022-2023: SAO representative to the SDSS-V Collaboration Committee.
- ⋆ 2020: Member of the CfA-IDEA Communication and Transparency Committee.
- ⋆ 2015-present: Member of the Large Synoptic Survey Telescope (LSST) Science Collaboration for Transients and Variable Stars (TVS).
- ⋆ 2015-2016: Member of the Program on Statistical, Mathematical and Computational Methods for Astronomy (ASTRO), that brought together experts in both astrophysics and statistics, in order to accelerate the adoption of modern statistical and mathematical tools into modern astronomy.
- ⋆ 2020-date: Member of the International Astronomical Union.
- ⋆ 2018: Invited mentor for at the NESSP Summit: Expanding NASA Opportunitoes for Underserved Communities.

Responsibility for meetings/scientific conferences.

- ⋆ Member of the SOC: "AstroAI workshop", Cambridge, MA, July 2025.
- ⋆ Co-chair of the SOC: "The changing macrocosm of astroinformatics : big data, artificial intelligence, statistical inference, challenges, and more", EAS Meeting, Cork, Ireland, 2025.
- ⋆ Chair of the SOC: "The impact of the rapidly evolving field of artificial intelligence on astrophysics research: avenues and potential breakthroughs", EAS Meeting, Padova, Italy, 2024.
- ⋆ Local Organizer - LSST Data Science School, Center for Astrophysics - 2021
- ⋆ Member of the SOC - First Latin American Conference on Astrophysics and Relativity. Bogotá, Colombia - 2020 (postponed to 2021).
- ⋆ 2018-present: Coordinator of the Learning Machine Learning (LML) School.

  RMG leads and coordinates the activities for the international LML school, which takes place every summer in Bogotá (Colombia), and brings together a multidisciplinary group of experts to teach advanced machine learning topics.
- ⋆ 2014-present: Coordinator of the AstroTwin teaching program.

  The AstroTwin teaching program is a collaboration between the Leiden Observatory (The Netherlands) and the Univeristy of Antioquia (Colombia) aimed at improving astronomy teaching in the South America Country at the undergraduate level.

Teaching

- ⋆ International Astronomical Unions's School for Young Astronomers. Invited lectureship. Topic: Machine Learning for Astronomy. Yachay University, Ecuador, 2025.
- ⋆ International Astronomical Unions's School for Young Astronomers. Invited lectureship. Topic: Astrostatistics and X-ray Astronomy. Cape Town, South Africa, 2023.

- ⋆ International Astronomical Unions's School for Young Astronomers. Invited lectureship. Topic: Astrostatistics and X-ray Astronomy. Socorro, Colombia, 2018.
- ⋆ Senior Teaching Fellow for AM207: Monte Carlo Methods, Stochastic Optimization School of Engineering and Applied Science (SEAS). Harvard University. 2015-2017.
- ⋆ Summer school: Learning Machine Learning - Lecturer. Universidad de los Andes, Bogotá, 2018-2024.
- ⋆ Summer school: AstroTwin Colombia/Leiden - Lecturer. Universidad de Antioquia, 2021-2022.

Mentoring experience

- ⋆ Supervised 4 AstroAI summer internship projects, 2025.
- ⋆ PhD research: Nicolo Pinciroli. *Augmenting X-ray astronomical representations with text.* Politecnico di Milano, Italy/Center for Astrophysics | Harvard & Smithsonian (US), Harvard University (USA) - 2023-2024
- ⋆ PhD research: Justina Yang. *A Data-Driven Emulator for Pile-Up in X-ray Detectors.* Center for Astrophysics | Harvard & Smithsonian (US), Harvard University (USA) - 2023-2024
- ⋆ Master Thesis: Ellis Jones. *Identification of Young Stars with Disks in Massive Star Clusters Westerlund 1 and Westerlund 2 with JWST.* Center for Astrophysics | Harvard & Smithsonian (US), University of Southampton (UK) - 2024-2025
- ⋆ Master Thesis: Alex Ostridge. *Using ML to Characterize Gravitational Less Mass models.* Center for Astrophysics | Harvard & Smithsonian (US), University of Southampton (UK) - 2023-2024
- ⋆ Master Thesis: Steven Dillmann. *Machine Learning for the Detection of High-energy Transients.* Center for Astrophysics | Harvard & Smithsonian (US), University College London (UK) - 2023
- ⋆ Undergrad Thesis: Victor Samuel Perez. *Unsupervised Classification of X-ray Sources.* Center for Astrophysics | Harvard & Smithsonian (US), Universidad del Rosario (Colombia) - 2022-2023
- ⋆ Master Thesis: Megan Freeman. *The Weirdest Objects in the Chandra Source Catalog.* Center for Astrophysics | Harvard & Smithsonian (US), University of Southampton (UK) - 2019-2020
- ⋆ Master Thesis: Dennis Crake. *Finding the Weirdest Objects in the Transient Universe.* Center for Astrophysics | Harvard & Smithsonian (US), University of Southampton (UK) - 2018-2019
- ⋆ REU student Jacqueline Blaum. *Mining Big Data Over the Entire Infrared Sky.* Center for Astrophysics | Harvard & Smithsonian (US), Iowa State University - June-August 2018
- ⋆ Undergraduate Thesis: Andres Ramos-Padilla. *Understanding the Physics of Polycyclic Aromatic Hydrocarbos in Active Galaxies Through Infrared Observations.* Center for Astrophysics | Harvard & Smithsonian (US), Universidad Nacional de Colombia - 2016
- ⋆ Undergraduate Thesis: David Perez-Millan *Physical Properties of IRDCs Using a Thermal Emission Model.* Universidad de Antioquia (Colombia) - 2016
- ⋆ Master Thesis (Co-supervisor): James Kirk. *Characterising the Protostars in the Herschel Survey of Cygnus-X* Center for Astrophysics | Harvard & Smithsonian(US) - 2013-2014
- ⋆ Undergraduate Thesis: Bryan Alfonso Soler. *Identifying and Characterizing Sunspots with Convolutional Neural Networks.* Universidad Nacional de Colombia - 2019

Press releases and articles

- ⋆ **2025** "**Mystery of 'remarkable' cosmic explosion that lay hidden for years**", 02/17/2025, Royal Astronomical Society.
- ⋆ **2025** "**Stellar Pyrotechnics on Display in Super Star Cluster**", 01/13/2025, American Astronomical Society Meeting.
- ⋆ **2022** "**The Infrared Emission of Galaxies with Active Supermassive Black Holes**", 3/04/2022, Phys.org.
- ⋆ **2018** "**Astronomers Determine What Powers the Most Luminous Galaxiess** ", 07/07/2018, SciTechDaily, by Megan Watzke.
- ⋆ **2015** "**Inferring the star formation rates of galaxies**", 11/23/2015, Phys.org, by the Harvard-Smithsonian Center for Astrophysics
- ⋆ **2015** "**El hombre del infrarrojo**", 8/27/2015, by Ramiro Velázquez, El Colombiano (Spanish language)

Selected talks

- ⋆ **Invited 12/05/2024**, Chandra 25 Years Symposium: *AI with the Chandra Source Catalog*, Boston, MA.
- ⋆ **Invited 11/22/2024**, Northwestern University Astrophysics Colloquium: *X-ray Datasets as a Legacy Product for Machine Learning Discovery in High Energy Astrophysics*, Northwestern University.
- ⋆ **Invited 3/07/23**, NASA Astrophysics SD Colloquium: *New Avenues for Multi-Messenger Discoveries in High Energy Astrophysics*, NASA Goddard.
- ⋆ **Invited 8/12/23**, IAFI Summer Workshop: *AstroAI: A New Center for Artificial Intelligence and Astronomy*, MIT.
- ⋆ **Invited 7/10/19**, Fermilab Colloquium: *Finding Needles in The Haystack: Anomaly Detection in Astronomical Datasets*, Chicago (IL).
- ⋆ **Invited 11/30/18**, University of Pittsburgh Astrolunch: *Outlier detection in Time-Domain Surveys*, Pittsburgh (PA).
- ⋆ **Invited 3/22/19**, Berkeley Astronomy Machine Learning Seminar: *Machine Learning Methods in Astronomy: Classification and Anomaly Detection*, Berkeley (CA).
- ⋆ **Invited 11/29/18**, Smithsonian Institution + Google Artifical Intelligence Workshop: *Artifical Intelligence in Science: Examples from Astrophysics*, Washington (DC).
- ⋆ **Invited 9/23/2015**, Seminar of Astrophysics at Oxford University: *The star formation and AGN contribution to global galaxy SEDs*, Oxford (United Kingdom).
- ⋆ **Invited 5/12/2014**, Canadian Institute for Theoretical Astrophysics (CITA) *Star Formation in Local Interacting Galaxies: A Tale of Compactness*, Toronto (Canada)/
- ⋆ **Contributed**, 5th China-Chile Astronomy Bilateral Meeting: *The use of Machine Learning for the Analysis of Large Astronomical Datasets*, Kunming (China), 01/24/2019
- ⋆ **Contributed**, Modelling Galaxies Through Cosmic Times Meeting, University of Cambridge: *The AGN contribution to the global galaxy SEDs: Applying state-of-the-art fitting codes to hydrodynamical simulations*, Cambridge (United Kingdom), 9/17/2015

  Contributed, 231st AAS Meeting: *An Observational Study of Blended Young Stellar Clusters in the Galactic Plane - Do Massive Stars form First?*, National Harbor (MA), 1/5/2019

- ⋆ **Contributed**, Gas, Dust, and Star-Formation in Galaxies from the Local to Far Universe: *Variations of the ISM conditions across the Main Sequence of star-forming galaxies: observations and simulations*, Chania (Greece), 05/27/2015
- ⋆ **Contributed**, Far Infrared 2011 Meeting: *Beyond the Evident: A New Bayesian Tool for SED Fitting of Starbursts*, London (United Kingdom), 9/11/2011
- ⋆ **Contributed**, XXVIIth General Assembly of the International Astronomical Union: *Astronomy Education in Colombia: Challenges for the Next Decade*, Rio de Janeiro (Brazil), 8/8/2009

Outreach activities

- ⋆ I write the blog *Postales desde la Tierra* (in Spanish language), about science and society. Link: `https://chateauperssite.wordpress.com/`
- ⋆ I regularly give public talks in Spanish about astrophysics, and more recently about Chandra Science. Links: `https://www.youtube.com/watch?v=WaHjf4jqcI4`, `https://www.youtube.com/watch?v=4t6_7-ZIRLk`
- ⋆ I also often write for *El Espectador*, one of Colombia's largest newspapers on science topics. Link: `https://bit.ly/2Gd3pKZ`

Scientific production and impact

- ⋆ **32** refereed publications (148 total publications), **1118** total citations
- ⋆ h-index: **17**, g-index: 33, read10-index: 39.8

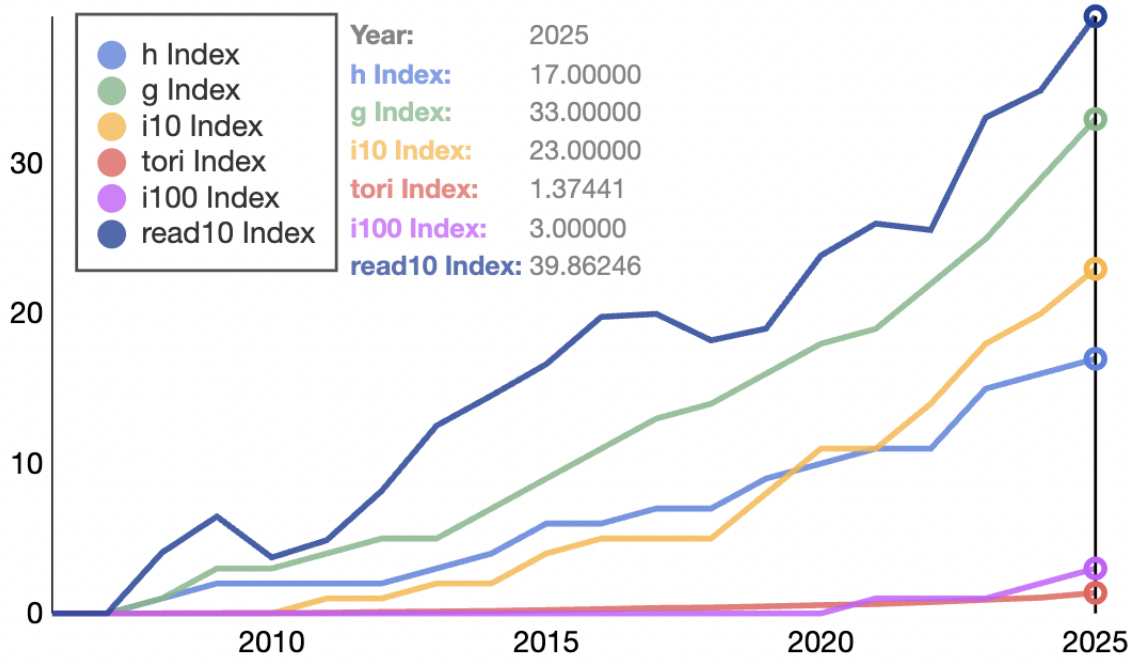

Figure 1: Several impact indices for my publications, as a function of time.

Selected refereed publications

Full publications lists: `https://ui.adsabs.harvard.edu/public-libraries/iVHqFA0uQR2Ed0b8ouC7zQ`
`https://openreview.net/search?content=all&group=all&source=all&term=martinez-galarza`

- ⋆ **Martínez-Galarza**, J. R., et al. *Augmenting X-ray Astronomical Representations with Scientific Knowledge through Contrastive Learning.* Re-Align Workshop, International Conferences on Learning Representations, 2025.
- ⋆ Song, Y., Villar, A., and **Martínez-Galarza**, J. R. *A Poisson Process Autodecoder for X-Ray Soirces*, 2025, ApJ, 988. 143S.
- ⋆ Dillmann, S., **Martínez-Galarza**, J. R., et al. *Representation learning for time-domain high-energy astrophysics: Discovery of extragalactic Fast X-ray Transient XRT 200515*, 2025, MNRAS, 537, 931D.
- ⋆ Lanusse, F. et al. incl. **Martínez-Galarza**, J. R., *The Multi-modal Universe: Enabling Large-Scale Machine Learning with 70TB of Astronomical Scientific Data, submitted to NeurIPS.*
- ⋆ *Evans, I., Evans, J.,* **Martínez-Galarza**, *J. R. et al., The Chandra Source Catalog Release 2 Series, ApJS, 274, 22E, 2024.*
- ⋆ *Pérez-Díaz, V.,* **Martínez-Galarza**, *J. R., Caicedo, A., & D'Abrusco, R, Unsupervised machine learning for the classification of astrophysical X-ray sources, MNRAS, 528, 4852P, 2024.*
- ⋆ *Kim, D.W., Malnati, A., Cassity, A., Fabbiano, G.,* **Martínez-Galarza**, *J. R. & O'Sullivan, E., Revisiting X-Ray-bright Optically Normal Galaxies with the Chandra Source Catalog, ApJ, 955, 56K, 2023.*
- ⋆ *Azadi et al. incl.* **Martínez-Galarza**, *J. R.., Disentangling the AGN and Star formation Contributions to the Radio-X-Ray Emission of Radio-loud Quasars at* $1 < z < 2$*, ApJ, 945, 145A, 2023.*
- ⋆ **Martínez-Galarza**, *J. R., Bianco, F., Crake, D., Tirumala, K., Mahabal, A., Graham, M., Giles, D., 2020, A method for finding anomalous astronomical light curves and their analogues, MNRAS, 508, 5734M, 2021.*
- ⋆ *Ramos-Padilla, A., Smith, H., Ashby, M.,* **Martínez-Galarza**, *J. R., Weiner, A., Dietrich, J., Beverage, A., Higuera, A., 2020, The AGN contribution to the UV-FIR luminosities of interacting galaxies and its role in identifying the Main Sequence, MNRAS, 499, 4325R, 2020.*
- ⋆ *Dietrich, J., Weiner, A. S., Ashby, M. L. N., Hayward, C. C.,* **Martínez-Galarza**, *J. R., et al., 2018, The AGN luminosity fraction in merging galaxies, MNRAS, 480, 3562.*
- ⋆ *Malz, A., Hlozek, R., Allam, T., Bahmanyar, A., Biswas, R., et al., 2019, The Photometric LSST Astronomical Time-series Classification Challenge (PLAsTiCC): Selection of a performance metric for classification probabilities balancing diverse science goals, AJ, 158, 171.*
- ⋆ **Martínez-Galarza** *J. R., Protopapas, P., Smith, H. A., & Morales, E. F. E., 2018, Unraveling the Spectral Energy Distributions of Clustered YSOs, ApJ, 864, 71.*
- ⋆ *Saral, G., Hora, J. L., Audard, M., Koenig, X. P.,* **Martínez-Galarza**, *J. R., et al., 2017, Young Stellar Objects in the Massive Star-forming Regions W51 and W43, ApJ, 839, 108.*
- ⋆ **Martínez-Galarza**, *J. R., Smith, H. A., Lanz, L., Hayward, C. C., Zezas, A., et al., 2016, Variations of the ISM Compactness Across the Main Sequence of Star Forming Galaxies: Observations and Simulations, ApJ, 817, 76.*
- ⋆ *Azimlu, M.,* **Martínez-Galarza**, *J. R., & Muench, A. A., 2015, A WISE Census of Young Stellar Objects in the Perseus OB2 Association, AJ, 150, 95.*
- ⋆ *Willis, S., Guzman, A., Marengo, M., Smith, H. A.,* **Martínez-Galarza**, *J. R., et al., 2015, The Schmidt Law in Six Galactic Massive Star-forming Regions, ApJ, 809, 87.*

- ⋆ *Hayward, C. C., Lanz, L., Ashby, M. L. N., Fazio, G., Hernquist, L., et al., 2014, The total infrared luminosity may significantly overestimate the star formation rate of quenching and recently quenched galaxies, MNRAS, 445, 1598.*
- ⋆ **Martínez-Galarza**, *J. R., Hunter, D., Groves, B., & Brandl, B., 2012, Ongoing Massive Star Formation in NGC 604, ApJ, 761, 3.*
- ⋆ **Martínez-Galarza**, *J. R., Groves, B., Brandl, B., de Messieres, G. E., Indebetouw, R., et al., 2011, The Physical Conditions in Starbursts Derived from Bayesian Fitting of Mid-infrared Spectral Energy Distribution Models: 30 Doradus as a Template, ApJ, 738, 176.*
- ⋆ **Martínez-Galarza**, *J. R., Kamp, I., Su, K. Y. L., Gáspár, A., Rieke, G., et al., 2009, Infrared Emission by Dust Around λ Bootis Stars: Debris Disks or Thermally Emitting Nebulae?, ApJ, 694, 165.*

Selected SPIE papers

- ⋆ **Martínez-Galarza**, J. R., Glauser, A. M., Hernán-Caballero, A., Azzollini, R.; Glasse, A., et al. (2010), *Wavelength calibration of the JWST-MIRI medium resolution spectrometer*, SPIE, 7731E, 3.
- ⋆ Lim, T., Alvarez, J. L., Bauwens, E., Garcia Bedregal, A., Blommaert, J., et al. (2008), *First results from MIRI verification model testing*, SPIE, 70103A, 12.

Selected white papers

- ⋆ Fabbiano, G., Elvis, M., Accomazzi, A., Berriman, G. B., Brickhouse, N., et al. (2019), *Increasing the Discovery Space in Astrophysics: The Exploration Question for Compact Objects*, **Astro2020: Decadal Survey on Astronomy and Astrophysics**, science white papers, BAAS, 51, 89.
- ⋆ Fabbiano, G., Elvis, M., Accomazzi, A., Berriman, G. B., Brickhouse, N., et al. (2019), *Increasing the Discovery Space in Astrophysics: The Exploration Question for Galaxy Evolution*, **Astro2020: Decadal Survey on Astronomy and Astrophysics**, science white papers, BAAS, 51, 86.
- ⋆ Nord, B., Connolly, A., Kinney, J., Kubica, J., Narayan, G., et al. (2019), *Algorithms and Statistical Models for Scientific Discovery in the Petabyte Era*, **Astro2020: Decadal Survey on Astronomy and Astrophysics**, science white papers, BAAS, 51, 224.

Books

- ⋆ Wilkes, B., D'Abrusco, R. & **Martínez-Galarza**, J. R., 2019, *Chandra X-ray Observatory Overview* in book *The Chandra X-ray Observatory: Exploring the high energy universe*, IOP, doi:10.1088/2514-3433/ab43dc
- ⋆ **Martínez-Galarza**, J. R., 2012, *Mid-infrared spectroscopy of starbursts : from Spitzer-IRS to JWST-MIRI*, Ph. D. thesis, University of Leiden (2012), ISBN: 9789461821232
- ⋆ **Martínez-Galarza**, J. R., 2013, *Astronomía en la próxima década: desde el telescopio espacial Hubble hasta el James Webb* in book *Astronomía para todos. Retos modernos de una ciencia milenaria* (2013), eISBN: 9789587616569