Joaquín **Hernández-Yévenes**

Astronomer · Data Analyst · Data Scientist

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Education

Universidad de Concepción — *Concepción, Chile*

Master degree (MSc) in Astronomy — *Mar, 2022 – Jan, 2024*

- Thesis title: WISE2MBH: A scaling-based algorithm for probing supermassive black hole masses through WISE photometry
- Advisor: Dr. Neil Nagar

Professional title in Astronomy — *Mar, 2018 – Aug, 2023*

Bachelor degree (BSc) in Astronomy — *Mar, 2018 – Dec, 2021*

Experience

Universidad de Concepción — *Concepción, Chile*

Research Analyst — *Feb. 2024 - Present*

- Responsible for weekly reports on methods and results in the ETHER database.
- Maintenance of WISE2MBH pipeline and library for processing +3 million astronomical sources.
- Managed to optimize the time in observation proposals by 25% by implementing clustering algorithms.

Research Assistant — *Mar. 2022 - Jan. 2024*

- Developed the WISE2MBH algorithm to address data completeness in the ETHER database.
- Co-author of +3 publications, presenting at conferences and securing +100 hours of observation time.

Class Assistant — *Aug. - Dec. 2023*

- Responsible for conducting practical classes, elaborating and evaluating assignments and exams for two final year courses.

Harvard University — *Cambridge, MA, USA*

Research Internship — *Mar. - Apr. 2023*

- Late stage development of the WISE2MBH algorithm that estimate supermassive black hole masses from WISE data.
- Explore uses for EHT, ngEHT, and ALMA to present proposals based on the algorithm estimates and population predictions.
- Discussion about WISE2MBH parent and final sample, and possible interest of the community.
- Discussion over super massive black hole binary candidates and strategies to detect them.

Publications

5 On systematics of supermassive black hole mass estimates within the ETHER sample — *2024*
***Hernández-Yévenes J.**, & Nagar N., et al.* — *in prep.*

4 ETHER-FP: Exploring the fundamental plane of black hole activity and radio emission mechanisms in active galactic nuclei — *2024*
*Arratia V., Nagar N., **Hernández-Yévenes J.** & Bandyopadhyay B.* — *in prep.*

3 Using WISE cataloged data for morphology, bulge fraction and black hole mass estimation — *2024*
***Hernández-Yévenes J.**, Nagar N., Arratia V. & Jarrett T.H.* — *Accepted in RMxAC*

2 WISE2MBH: A scaling-based algorithm for probing supermassive black hole masses through WISE catalogues — *Jul, 2024*
***Hernández-Yévenes J.**, Nagar N., Arratia V. & Jarrett T.H.* — *MNRAS*

1 Event Horizon and Environs (ETHER): A Curated Database for EHT and ngEHT Targets and Science — *Jan, 2023*
*Ramakrishnan V., Nagar N., Arratia V., **Hernández-Yévenes J.**, Pesce D.W., Nair D.G., Bandyopadhyay B., et al.* — *Galaxies*

Skills

Soft Skills	Leadership, Communication, Problem Solving, Goal Orientation
Programming	Python, SQL, Bash, TEX, HTML5, CSS
Software	TopCat, Excel, DS9, SSMS, PowerBI
Libraries	NumPy, Pandas, Matplotlib, Seaborn, SciPy, PyTorch, Tensorflow, statsmodels, scikit-learn
Languages	Spanish (native), English (C1)

Workshops & Certificates

2024	**Machine Learning Specialization,** DeepLearning.AI & Standford University	*Certificate*
2023	**Certification in Machine Learning with Python,** freeCodeCamp	*Certificate*
2022	**Certification in Data Analysis with Python,** freeCodeCamp	*Certificate*
2022	**Certification in Scientific Computing with Python,** freeCodeCamp	*Certificate*
2022	**Certification in Cloud Computing,** Google & Esc. de Org. Industrial	*Certificate*
2021	**School of Physics of the Master in Physical Sciences,** Universidad del Bío-Bío	

Successful PI and Co-PI observing proposals

6	Towards resolving orbiting binary SMBH, plus shadows, jets, and accretion flows of single SMBH: ACA fluxes ***PI**, 72.6 hours (7M), Priority C*	*2023* *ALMA Cycle 10*
5	Imaging M84 and Sombrero at < 50 gravitational radii: jets and accretion inflow *Co-PI (**PI: Dhanya Nair**), 12 hours (12M), Priority B*	*2023* *ALMA Cycle 10*
4	A sample of SMBH shadows, rings, accretion flows and jet bases: exploratory EHT+ALMA flux measurements *Co-PI (**PI: Neil Nagar**), 45 hours (12M), Priority B*	*2023* *ALMA Cycle 10*
3	A sample of black holes at < 100 Rg scales: accretion flows, jets, and shadows *Co-PI (**PI: Dhanya Nair**), 22 hours (7mm), Priority A*	*2022* *VLBA 2023A*
2	A sample of SMBH shadows, rings, accretion flows and jet bases: exploratory EHT+ALMA flux measurements *Co-PI (**PI: Neil Nagar**), 36 hours (12M), Priority B*	*2022* *ALMA Cycle 9*
1	NGC4261: the 2nd jet at < 50 gravitational radii (and the 3rd black hole shadow?) *Co-PI (**PI: Neil Nagar**), 6 hours (12M), Priority B*	*2022* *ALMA Cycle 9*

Teaching

Extragalactic Astronomy (Assistantship)

Universidad de Concepción, Concepción, Chile

Professor: Dr. Ricardo Demarco

Semester II, 2023

Radioastronomy (Assistantship)

Universidad de Concepción, Concepción, Chile

Professor: Dr. Neil Nagar

Semester II, 2023

Talks, Posters and Outreach

Nov, 2023	**Using WISE cataloged data for morphology, bulge fraction and black hole mass estimation,** Conference Poster	*XVII RRLA-LARIM, Montevideo, Uruguay*
Nov, 2022	**La nueva generación del Telescopio Horizonte de Eventos (ngEHT) y Chile,** Outreach Talk	*Universidad de Concepción, Concepción, Chile*