

# Rodrigo Carvajal

PHD RESEARCHER IN ASTROPHYSICS

OAL - Edifício Leste, 2º piso. Tapada da Ajuda. 1349-018 Lisboa. Portugal

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## Summary

Final-year PhD student in Physics and Astrophysics at the Instituto de Astrofísica e Ciências do Espaço (IA), in the Faculdade de Ciências of the Universidade de Lisboa (FCUL), in Lisbon, Portugal. Working on identification and characterisation of radio-detected active galactic nuclei from multi-wavelength data and implementation of machine learning tools to detect and study them in large-area radio surveys. My work has been presented in Carvajal et al. (2021, 2023) among other publications and contributed presentations.

## Education

### INSTRUCTION

#### Faculdade de Ciências, Universidade de Lisboa

PHD IN PHYSICS AND ASTROPHYSICS (THESIS SUBMITTED)

Lisbon, Portugal

Nov. 2019 - 2024

- Thesis: 'Towards better selection and characterisation criteria for high-redshift radio galaxies using machine-assisted pattern recognition' Supvs.: J. Afonso, I. Matute, H. Messias.

#### Pontificia Universidad Católica de Chile

MSC IN ASTROPHYSICS (MAXIMUM DISTINCTION)

Santiago, Chile

Mar. 2016 - Jan. 2019

- Thesis: Stacking UV-selected Lyman-Break Galaxies in the ALMA Frontier Fields<sup>1</sup>. Supv.: F. E. Bauer.

#### Universidad de Chile

LICENCIADO EN CIENCIAS (BSC EQUIVALENT. DISTINCTION)

Santiago, Chile

Mar. 2007 - Jan. 2014

- Degree in Astronomy (no thesis required).

### PRIZES AND AWARDS

- 2019 - 2024 **PhD::SPACE Fellowship**, Instituto de Astrofísica e Ciências do Espaço  
2024 **JAO Visitor Program**, Joint ALMA Observatory  
2017 **Teaching Assistant Scholarship**, Pontificia Universidad Católica de Chile  
2007 - 2010 **Beca Universidad de Chile**, Universidad de Chile

Lisbon, Portugal

Santiago, Chile

Santiago, Chile

Santiago, Chile

## Publications

Ten refereed publications. Three of them as first author with 21 citations. Seven publications as co-author, with 137 citations. Additionally, one publication in a conference proceedings book and one press release with impact on mass media. Values from NASA ADS as of October, 2024<sup>2</sup>.

### REFEREED ARTICLES

#### Identifying type II quasars at intermediate redshift with few-shot learning photometric classification

P. A. C. CUNHA, A. HUMPHREY, J. BRINCHMANN, S. G. MORAIS, **R. CARVAJAL**, J. M. GOMES, I. MATUTE, AND A. PAULINO-AFONSO

A&A 687, A269 A269. 2024. doi: 10.1051/0004-6361/202346426

#### Selection of powerful radio galaxies with machine learning

**R. CARVAJAL**, I. MATUTE, J. AFONSO, R. P. NORRIS, K. J. LUKEN, P. SÁNCHEZ-SÁEZ, P. A. C. CUNHA, A. HUMPHREY, H. MESSIAS, S. AMARANTIDIS, D. BARBOSA, H. A. CRUZ, H. MIRANDA, A. PAULINO-AFONSO, AND C. PAPPALARDO

A&A 679, A101 A101. 2023. doi: 10.1051/0004-6361/202245770

#### Improving machine learning-derived photometric redshifts and physical property estimates using unlabelled observations

A. HUMPHREY, P. A. C. CUNHA, A. PAULINO-AFONSO, S. AMARANTIDIS, **R. CARVAJAL**, J. M. GOMES, I. MATUTE, AND P. PAPADEROS

MNRAS 520.1 pp. 305–313. 2023. doi: 10.1093/mnras/stac3596

#### An investigation of the star-forming main sequence considering the nebular continuum emission at low-z

H. MIRANDA, C. PAPPALARDO, P. PAPADEROS, J. AFONSO, I. MATUTE, C. LOBO, A. PAULINO-AFONSO, **R. CARVAJAL**, S. LORENZONI, AND D. SANTOS

A&A 669, A16 A16. 2023. doi: 10.1051/0004-6361/202244390

#### Exploring New Redshift Indicators for Radio-Powerful AGN

**R. CARVAJAL**, I. MATUTE, J. AFONSO, S. AMARANTIDIS, D. BARBOSA, P. CUNHA, AND A. HUMPHREY

Galaxies 9.4 p. 86. 2021. doi: 10.3390/galaxies9040086

#### Self-consistent population spectral synthesis with FADO. II. Star formation history of galaxies in spectral synthesis methods

C. PAPPALARDO, L. S. M. CARDOSO, J. M. GOMES, P. PAPADEROS, J. AFONSO, I. BREDÁ, A. HUMPHREY, T. SCOTT, S. AMARANTIDIS, I. MATUTE, **R. CARVAJAL**, S. LORENZONI, P. LAGOS, A. PAULINO-AFONSO, AND H. MIRANDA

A&A 651, A99 A99. 2021. doi: 10.1051/0004-6361/202039792

#### The ALMA Frontier Fields Survey. V. ALMA Stacking of Lyman-Break Galaxies in Abell 2744, Abell 370, Abell S1063, MACSJ0416.1-2403 and MACSJ1149.5+2223

**R. CARVAJAL**, F. E. BAUER, R. J. BOUWENS, P. A. OESCH, J. GONZÁLEZ-LÓPEZ, T. ANGUITA, M. ARAVENA, R. DEMARCO, L. GUAITA, L. INFANTE, S. KIM, R. KNEISSL, A. M. KOEKEMOER, H. MESSIAS, ET AL.

A&A 633, A160 A160. 2020. doi: 10.1051/0004-6361/201936260

#### The ALMA Frontier Fields Survey. III. 1.1 mm emission line identifications in Abell 2744, MACSJ 0416.1-2403, MACSJ 1149.5+2223, Abell 370, and Abell S1063

<sup>1</sup>Thesis text available at <https://repositorio.uc.cl/handle/11534/22335>

<sup>2</sup>ADS Public Library: <https://ui.adsabs.harvard.edu/public-libraries/prom6U0VR26WDYTftnpfYw>

J. GONZÁLEZ-LÓPEZ, F. E. BAUER, M. ARAVENA, N. LAPORTE, L. BRADLEY, M. CARRASCO, **R. CARVAJAL**, R. DEMARCO, L. INFANTE, R. KNEISSL, A. M. KOEKEMOER, A. M. MUÑOZ ARANCIBIA, P. TRONCOSO, E. VILLARD, AND A. ZITRIN  
A&A 608, A138 A138. 2017. doi: 10.1051/0004-6361/201730961

**The ALMA Frontier Fields Survey. II. Multiwavelength Photometric analysis of 1.1 mm continuum sources in Abell 2744, MACSJ0416.1-2403 and MACSJ1149.5+2223**  
N. LAPORTE, F. E. BAUER, P. TRONCOSO-IRIBARREN, X. HUANG, J. GONZÁLEZ-LÓPEZ, S. KIM, T. ANGUITA, M. ARAVENA, L. F. BARRIENTOS, R. BOUWENS, L. BRADLEY, G. BRAMMER, M. CARRASCO, **R. CARVAJAL**, ET AL.  
A&A 604, A132 A132. 2017. doi: 10.1051/0004-6361/201730628

**The ALMA Frontier Fields Survey. I. 1.1 mm continuum detections in Abell 2744, MACS J0416.1-2403 and MACS J1149.5+2223**  
J. GONZÁLEZ-LÓPEZ, F. E. BAUER, C. ROMERO-CAÑIZALES, R. KNEISSL, E. VILLARD, **R. CARVAJAL**, S. KIM, N. LAPORTE, T. ANGUITA, M. ARAVENA, R. J. BOUWENS, L. BRADLEY, M. CARRASCO, R. DEMARCO, ET AL.  
A&A 597, A41 A41. 2017. doi: 10.1051/0004-6361/201628806

## CONFERENCE PROCEEDINGS

### Radio Galaxy Detection Prediction with Ensemble Machine Learning

**R. CARVAJAL**, I. MATUTE, J. AFONSO, S. AMARANTIDIS, AND D. BARBOSA  
Machine Learning for Astrophysics, 2023, Cham. ISBN: 978-3-031-34167-0. doi: 10.1007/978-3-031-34167-0\_6

## PRESS RELEASES

### Black holes are missing in the early Universe, and computers are after them

INSTITUTE OF ASTROPHYSICS AND SPACE SCIENCES · FACULTY OF SCIENCES, UNIVERSITY OF LISBON · Dec. 2023  
Reproduced in, for instance, National Geographic Portugal

# Experience

## RESEARCH EXPERIENCE

### Faculdade de Ciências, Universidade de Lisboa

PHD RESEARCHER Lisbon, Portugal  
Nov. 2019 - Present

- Research as a PhD student. Project ‘The first Radio Galaxies in the Universe’.

### Joint ALMA Observatory (JAO)

SCIENTIFIC VISITOR Santiago, Chile  
May. 2024

- Research as scientific visitor for four weeks. Working with H. Messias in the project ‘Identifying giants in ELAIS-S1 with machine learning’.

### Institute of Astrophysics, Pontificia Universidad Católica de Chile

RESEARCH ASSISTANT Santiago, Chile  
Jan. 2019 - Oct. 2019

- Imaged and analysed ALMA data for project ‘Hunting for redshifts of faint DSGs in A2744’.

### Institute of Astrophysics, Pontificia Universidad Católica de Chile

MSC RESEARCHER Santiago, Chile  
Mar. 2016 - Jan. 2019

- Research as MSc student. Project ‘Lyman-Break Galaxies in the ALMA Frontier Fields’.

### Institute of Astrophysics, Pontificia Universidad Católica de Chile

RESEARCH ASSISTANT (SUPVS. PROF. FRANZ BAUER, DR JORGE GONZÁLEZ) Santiago, Chile  
Aug. 2015 - Mar. 2016

- Used image enhancement techniques to improve quality of ALMA observations and study objects with low signal-to-noise ratio.

### Joint ALMA Observatory (JAO)

RESEARCH ASSISTANT (SUPVS. DR RÜDIGER KNEISSL, DR DAVID RABANUS) Santiago, Chile  
Jan. 2014 - Mar. 2015

- Studied Mars’ atmosphere and produce profiles for temperature, and wind speed using ALMA observations.

### Departament of Astronomy, Universidad de Chile

RESEARCH ASSISTANT (SUPV. PROF. SEBASTIÁN LÓPEZ) Santiago, Chile  
Aug. 2013 - Oct. 2013

- Studied differences from outer structures of lensing galaxies through absorbed light of far quasars.

### Departament of Astronomy, Universidad de Chile

RESEARCH ASSISTANT (SUPV. DR ISABELLE PÂRIS) Santiago, Chile  
Mar. 2013 - May. 2013

- Searched quasars pairs at small distances over catalogue of more than 100000 objects (SDSS-DR9 Quasar Catalog. Pâris et al. 2012).

### Departament of Astronomy, Universidad de Chile

RESEARCH ASSISTANT (SUPV. PROF. SEBASTIÁN LÓPEZ) Santiago, Chile  
Mar. 2012 - Jul. 2012

- Confirmed influence of thermal-broadening Doppler parameter in turbulent broadening in Intergalactic Medium.
- Measured correlation for results of Voigt curve-fitting procedures in metallic species absorption lines from far quasar emission.

### Departament of Astronomy, Universidad de Chile

RESEARCH ASSISTANT (SUPV. PROF. SEBASTIÁN LÓPEZ) Santiago, Chile  
Aug. 2011 - Dec. 2011

- Determined influence of thermal-broadening Doppler parameter in turbulent broadening in Intergalactic Medium.

### Departament of Astronomy, Universidad de Chile

RESEARCH ASSISTANT (SUPV. DR NADIA LO) Santiago, Chile  
Jan. 2011

- Worked in project “A study of the Molecular Properties of the Vela Molecular Ridge (Coud C)” searching possible clumps using data from Mopra Radio Telescope.

## STUDENT SUPERVISION EXPERIENCE

### Instituto de Astrofísica e Ciências do Espaço

CO-SUPERVISOR SUMMER INTERNSHIP (SUPV. DR I. MATUTE) Lisbon, Portugal  
Jul. 2024

- Guided J. Castelo and F. Rosado. Project: ‘Supermassive Black Hole growth on galaxies: Linking AGN phases through Cosmic Time’.

## Instituto de Astrofísica e Ciências do Espaço

CO-SUPERVISOR SUMMER INTERNSHIP (SUPVS. DRS. B. ARSIOLI, I. MATUTE)

- Guided L. Rodrigues, G. Monteiro, A. Correia, D. Barreta, and T. Melo. Project: 'Multifrequency Analysis and Machine Learning for the most powerful quasars in the Universe'.

Lisbon, Portugal

Jul. 2023

## Faculdade de Ciências, Universidade de Lisboa

CO-SUPERVISOR BSc STUDENT (SUPV. DR I. MATUTE)

- Guided J. Bagagem. Project: 'Connecting galaxies photometry with Super-Massive Black Hole (SMBH) properties: A machine learning approach'.

Lisbon, Portugal

Sep. 2022 - Feb. 2023

## Faculdade de Ciências, Universidade de Lisboa

CO-SUPERVISOR BSc STUDENT (SUPV. DR I. MATUTE)

- Guided J. Lopes. Project: 'Modelling Active Galactic Nuclei with Machine Learning'.

Lisbon, Portugal

Sep. 2021 - Feb. 2022

## Faculdade de Ciências, Universidade de Lisboa

CO-SUPERVISOR BSc STUDENT (SUPV. DR I. MATUTE)

- Guided B. Resendes. Project: 'Identifying and characterising AGN in next-generation radio surveys with machine learning'.

Lisbon, Portugal

Sep. 2021 - Feb. 2022

## Instituto de Astrofísica e Ciências do Espaço

CO-SUPERVISOR SUMMER INTERNSHIPS' STUDENTS (SUPV. DR I. MATUTE)

- Guided J. Sandrin, P. Ferreira, P. Rodrigues, and A. Monteiro. Project: 'Identifying and characterising AGN in next-generation radio surveys using machine and deep learning'.

Lisbon, Portugal

Jul. 2021

## Instituto de Astrofísica e Ciências do Espaço

CO-SUPERVISOR SUMMER INTERNSHIPS' STUDENTS (SUPV. DR J. AFONSO)

- Guided A. Labib, M. E. Pimentel, L. Barroso, and J. Rato. Project: 'The 200: exploring the most active supermassive black holes in the first Gyr of the Universe'.

Lisbon, Portugal

Jul. 2021

## Faculdade de Ciências, Universidade de Lisboa

CO-SUPERVISOR BSc STUDENT (SUPV. DR I. MATUTE)

- Guided I. Tiago. Project: 'Understanding triggering Radio emission from AGNs'.

Lisbon, Portugal

Sep. 2020 - Feb. 2021

## Faculdade de Ciências, Universidade de Lisboa

CO-SUPERVISOR BSc STUDENT (SUPV. DR J. AFONSO)

- Guided L. Piscarreta on studying radio and X-ray emission of high-z AGN.

Lisbon, Portugal

Jul. 2020

## TEACHING EXPERIENCE

### Department of Physics, Facultad de Ciencias Físicas y Matemáticas, Universidad de Chile

TEACHING ASSISTANT (LECTURER: PROF. SEBASTIÁN LÓPEZ)

- Teaching Assistant of course FI1001: Introduction to Newtonian Physics.

Santiago, Chile

Mar. 2013 - Jul. 2013

### School of Engineering, Facultad de Ciencias Físicas y Matemáticas, Universidad de Chile

TEACHING ASSISTANT (LECTURER: PROF. SEBASTIÁN LÓPEZ)

- Teaching Assistant of course EI2001: Project Workshop.
- Taught students how to characterise a CCD at the University Observatory.

Santiago, Chile

Mar. 2013 - Jul. 2013

### Department of Astronomy, Facultad de Ciencias Físicas y Matemáticas, Universidad de Chile

TEACHING ASSISTANT (LECTURER: PROF. SEBASTIÁN LÓPEZ)

- Teaching Assistant of course AS3004-AS758.

Santiago, Chile

Mar. 2012 - Jul. 2012

## TIME ALLOCATION

### PI. ACA@ALMA

2024.1.01181.S. HOW RICH ARE THE ENVIRONMENTS OF HIGH REDSHIFT RADIO GALAXIES?

115 hours (Graded C)

Cycle 11

### Co-PI. 12m@ALMA

2017.1.01219.S. HUNTING FOR REDSHIFTS OF FAINT DSFGs IN A2744 (PI: F. BAUER)

14 hours (Graded B)

Cycle 5

## OBSERVATION EXPERIENCE

### 30m Pico Veleta Radio Telescope

NIKA2 AND EMIR INSTRUMENTS - ONE-WEEK OBSERVATION RUN UNDER POOLED OBSERVATIONS SCHEME

IRAM, Spain

Nov. 2022

### 6.5m Magellan-Clay Telescope

MAGE INSTRUMENT - ONE-NIGHT OBSERVATION RUN UNDER THE SUPERVISION OF DR. ISABELLE PÂRIS

LCO, Chile

Feb. 2013

## WORKING EXPERIENCE

### Observatorio Astronómico Andino (OAA)

TOURIST GUIDE

- Showed tourists main features of night sky and answering questions on Astronomy and Astrophysics in both Spanish and English.

Santiago, Chile

2013 - 2019

## Participation in Conferences and Seminars

### CONTRIBUTED TALKS

#### International EMU Collaboration Meeting 2024

'ENHANCING RADIO LUMINOSITY FUNCTIONS WITH MACHINE LEARNING'

Perth. Western Australia

Sep. 2024

<b>XXXIV Encontro Nacional de Astronomia e Astrofísica (ENAA)</b> 'FEEDING RADIO LUMINOSITY FUNCTIONS WITH MACHINE LEARNING PREDICTIONS'	Guimarães. Portugal Sep. 2024
<b>Internal Workshop of the Instituto de Astrofísica e Ciências do Espaço (IA-ON9)</b> 'BLACK HOLES FROM BLACK BOXES'	Universidade de Lisboa. Portugal Jan. 2024
<b>Debating the potential of Machine Learning in astronomical surveys # 2</b> 'EXTRACTING PHYSICAL RULES FROM ENSEMBLE MACHINE LEARNING FOR THE SELECTION OF RADIO AGN'	IAP, Paris/Flatiron Institute, New York Nov. 2023
<b>XXXIII Encontro Nacional de Astronomia e Astrofísica (ENAA)</b> 'ENSEMBLE MACHINE LEARNING FOR THE SELECTION OF RADIO AGN IN MULTI-SURVEY DATA'	Universidade de Coimbra. Portugal Sep. 2023
<b>SPARCS XI. Meeting of the SKA Pathfinders Radio Continuum Surveys (SPARCS)</b> 'ENSEMBLE MACHINE LEARNING FOR RADIO GALAXY DETECTIONS'	IDIA. South Africa Nov. 2022
<b>XXXII Encontro Nacional de Astronomia e Astrofísica (ENAA)</b> 'ENSEMBLE MACHINE LEARNING FOR THE EXTRACTION OF HIGH-REDSHIFT RADIO GALAXIES'	University of Lisbon. Portugal Sep. 2022
<b>EMU International Virtual Meeting</b> 'SEARCHING FOR HIGH-Z RADIO GALAXY DETECTIONS WITH ENSEMBLE MACHINE LEARNING'	Online Jul. 2022
<b>Jornadas Doutorais (Doctoral Day) - Faculdade de Ciências</b> 'PREDICTION OF DISTANT RADIO GALAXIES CANDIDATES WITH MACHINE LEARNING'	Universidade de Lisboa. Portugal Feb. 2022
<b>SAZERAC SIPS: Learning the high-redshift Universe</b> 'HIGH-REDSHIFT RADIO GALAXIES CANDIDATES PREDICTION WITH ENSEMBLE MACHINE LEARNING'	Online Feb. 2022
<b>XVII SOCHIAS Meeting. Meeting of the Chilean Society of Astronomy</b> 'PREDICTION OF HIGH-REDSHIFT RADIO GALAXY CANDIDATES WITH ENSEMBLE MACHINE LEARNING'	Online Jan. 2022
<b>SPARCS X. Meeting of the SKA Pathfinders Radio Continuum Surveys (SPARCS)</b> 'USING ENSEMBLE MACHINE LEARNING TO PREDICT HIGH-REDSHIFT RADIO GALAXY DETECTIONS'	IDIA. South Africa Nov. 2021
<b>Internal Workshop of the Instituto de Astrofísica e Ciências do Espaço (IA-ON8)</b> 'OBTAINING HIGH-REDSHIFT RADIO GALAXY CANDIDATES WITH MACHINE LEARNING'	Universidade de Coimbra. Portugal Nov. 2021
<b>Debating the potential of Machine Learning in astronomical surveys</b> 'USING A SERIES OF MACHINE LEARNING MODELS FOR THE DETECTION OF HIGH-REDSHIFT RADIO GALAXY CANDIDATES'	IAP, France Oct. 2021
<b>50th Young European Radio Astronomers Conference</b> 'USING MACHINE LEARNING TO IDENTIFY HIGH-REDSHIFT RADIO GALAXY CANDIDATES'	IRAM Aug. 2021
<b>RGCW: A new window on the radio emission from galaxies, clusters and cosmic web</b> 'EXPLORING NEW REDSHIFT INDICATORS FOR RADIO-POWERFUL AGNs'	INAF. Italy Mar. 2021
<b>Internal Workshop of the Instituto de Astrofísica e Ciências do Espaço (IA-ON7)</b> 'SEARCHING FOR THE EARLIEST AGN IN THE RADIO SKY'	Online, Portugal Oct. 2020
<b>Jornadas Doutorais (Doctoral Day) - Faculdade de Ciências</b> 'THE FIRST RADIO GALAXIES IN THE UNIVERSE'	Universidade de Lisboa. Portugal Mar. 2020
<b>Distant Galaxies from the Far South</b> 'STACKING IN THE ALMA FRONTIER FIELDS'	Bariloche, Argentina Dec. 2017
<b>INVITED TALKS AND SEMINARS</b>	
<b>IA/ML Forum - ESO</b> 'HOW CONFIDENT CAN YOU BE? CALIBRATING PROBABILITIES FOR THE SELECTION OF AGN'	Garching, Germany Jun. 2024
<b>Seminar - Joint ALMA Observatory (JAO)</b> 'IDENTIFYING GIANTS IN ELAIS-S1 WITH MACHINE LEARNING'	Santiago, Chile May. 2024
<b>Python Coffee - ESO</b> 'SHAP ANALYSIS FOR INTERPRETABLE MACHINE LEARNING IN ASTROPHYSICS'	Santiago, Chile May 2024
<b>Machine Learning in Australian Astronomy</b> 'SELECTION OF RADIO-DETECTED AGN WITH ENSEMBLE MACHINE LEARNING'	Australia Nov. 2023
<b>Machine Learning in Astronomy Group – SPARCS</b> 'DEVELOPING A ML PIPELINE TO DETECT HIGH-REDSHIFT RADIO GALAXY CANDIDATES'	WSU. Sydney, Australia Jun. 2021
<b>IA - Galaxies Machine Learning Club</b> 'EXPLAINING MACHINE LEARNING MODELS: SHAP'	Porto, Portugal May. 2022
<b>Seminar - Instituto de Astrofísica e Ciências do Espaço</b> 'STACKING UV-SELECTED LYMAN-BREAK GALAXIES IN THE ALMA FRONTIER FIELDS'	Lisbon, Portugal Jul. 2020
<b>Seminar - ESO</b> 'STACKING UV-SELECTED LYMAN-BREAK GALAXIES IN THE ALMA FRONTIER FIELDS'	Santiago, Chile Jun. 2019
<b>CONTRIBUTED POSTERS</b>	
<b>Encontro Ciência '24: Encontro com a Ciência e Tecnologia em Portugal</b> 'PREDICTION OF RADIO AGN WITH ENSEMBLE MACHINE LEARNING IN MULTI-SURVEY DATA'	Porto, Portugal Jul. 2024
<b>Encontro Ciência '23: Encontro com a Ciência e Tecnologia em Portugal</b> 'ENSEMBLE MACHINE LEARNING FOR THE PREDICTION OF RADIO AGN IN MULTI-SURVEY DATA'	Aveiro, Portugal Jul. 2023
<b>Coordinated Surveys of the Southern Sky</b> 'RADIO GALAXY PREDICTION WITH MULTI-SURVEY DATA AND ENSEMBLE MACHINE LEARNING'	Garching, Germany Feb 2023
<b>VLA Sky Survey in the Multiwavelength Spotlight</b> 'SEARCHING FOR RADIO GALAXY DETECTIONS WITH ENSEMBLE MACHINE LEARNING'	NRAO. Socorro, NM. U.S.A. Sep. 2022
<b>International Conference on Machine Learning for Astrophysics - ML4Astro</b> 'RADIO GALAXY DETECTION PREDICTION WITH ENSEMBLE MACHINE LEARNING'	Catania, Italy May 2022

<b>Encontro Ciência '22: Encontro com a Ciência e Tecnologia em Portugal</b> 'FINDING HIGH-REDSHIFT RADIO GALAXIES WITH MACHINE LEARNING'	Lisbon, Portugal May 2022
<b>Encontro Nacional de Astronomia e Astrofísica</b> 'DETECTION OF HIGH-REDSHIFT RADIO GALAXIES USING MACHINE LEARNING MODELS'	Portugal Sep. 2021
<b>Encontro Ciência '21: Encontro com a Ciência e Tecnologia em Portugal</b> 'USING MACHINE LEARNING TO LOOK FOR HIGH-REDSHIFT RADIO GALAXIES'	Lisbon, Portugal Jun. 2021
<b>A precursor view of the SKA Sky</b> 'EXPLORING NEW REDSHIFT INDICATORS FOR RADIO-POWERFUL AGNs'	The SKA Observatory Mar. 2021
<b>Encontro Ciência '20: Encontro com a Ciência e Tecnologia em Portugal</b> 'MINING THE RADIO SKY TOWARD THE EARLIEST AGN'	Lisbon, Portugal Nov. 2020
<b>Encontro Nacional de Astronomia e Astrofísica</b> 'MINING THE RADIO SKY TOWARD THE EARLIEST AGN'	Online, Portugal Sep. 2020
<b>Ground and space observatories: a joint venture to planetary science</b> 'MAPPING THE WINDS ON MARS. TEST STUDY FOR PLANETARY ATMOSPHERIC MONITORING WITH ALMA'	Santiago, Chile Mar. 2015
<b>OTHER MEETINGS</b>	
'SPARCS XII 2024' - SKA PATHFINDERS RADIO CONTINUUM SURVEYS (SPARCS) - INAF	Bologna, Italy - May 2024
'MOONS SCIENCE CONSORTIUM MEETING 2024' - FACULDADE DE CIÊNCIAS, UNIVERSIDADE DE LISBOA	Lisbon, Portugal - Jan. 2024
'ARTIFICIAL INTELLIGENCE AND THE UNCERTAINTY CHALLENGE IN FUNDAMENTAL PHYSICS' - SCAI, PARIS AND INSTITUT PASCAL PARIS-SACLAY	Paris, France - Nov. 2023
'MACHINE LEARNING MEETS GALAXY CLASSIFICATION: ADDRESSING PARADIGMS OF GALAXY EVOLUTION AND THEIR ENVIRONMENT' - ESAC	Villafranca del Castillo, Spain - Nov. 2023
'COSMOLOGY IN THE RADIO SKY: PROSPECTS AND CHALLENGES IN THE SQUARE KILOMETRE ARRAY OBSERVATORY ERA' - INSTITUTO DE ASTROFÍSICA E CIÊNCIAS DO ESPAÇO	Portugal - Dec. 2021
'MACHINE LEARNING IN SCIENCE & ENGINEERING' - COLUMBIA UNIVERSITY - DATA SCIENCE INSTITUTE	NY U.S.A. - Dec. 2020
'SOCHIAS (CHILEAN SOCIETY OF ASTRONOMY) ANNUAL MEETING'	Pucón, Chile - Dec. 2020
'EXPLOITING ARCHIVES FOR RADIO ASTRONOMY IN THE SKA-ERA'	Lisbon, Portugal - Nov. 2020
'EUROPEAN ASTRONOMICAL SOCIETY ANNUAL MEETING'	Leiden, Netherlands - Jun. 2020
'SOCHIAS (CHILEAN SOCIETY OF ASTRONOMY) ANNUAL MEETING'	Santiago, Chile - Jan. 2011

## Skills

<b>Programming</b>	Python, $\LaTeX$ , C, Java, Bash, Mathematica, Matlab
<b>Software</b>	Common Astronomy Software Application (CASA), Tool for operations on catalogues and tables (TOPCAT), The Atmospheric Radiative Transfer Simulator (ARTS), SAOImage DS9, Gnuplot, ESO-MIDAS, EsoRex, Astropy
<b>Machine Learning</b>	scikit-learn, XGBoost, LightGBM, CatBoost, PyCaret, SHAP, betacal, ppscore, crepes
<b>Languages</b>	Spanish, English, Portuguese

## TRAINING

<b>18th Synthesis Imaging Workshop</b> NATIONAL RADIO ASTRONOMY OBSERVATORY	Socorro, NM. USA May. 2022
<b>Skilled, Innovative &amp; Entrepreneurial Scientists</b> INSTITUTO DE ASTROFÍSICA E CIÊNCIAS DO ESPAÇO	Coimbra, Portugal Apr. - May 2022
<b>SKA regional centre training event. Hands-on Containerisation</b> SCIENCE USER ENGAGEMENT (SUE) GROUP OF SKA REGIONAL CENTRE STEERING COMMITTEE	SKAO Feb. 2022
<b>ALMA Community Day (Cycle 7 Proposing Workshop)</b> JOINT ALMA OBSERVATORY (JAO)	Santiago, Chile Mar. 2019
<b>MUSE Data Reduction Workshop</b> INSITUTO DE ASTROFÍSICA, PONTIFICIA UNIVERSIDAD CATÓLICA DE CHILE (TAUGHT BY E. JOHNSTON)	Santiago, Chile Aug. 2019

## Outreach

<b>IX Ecuadorian School of Astronomy and Astrophysics</b> LECTURER: 'LOOKING FOR GALAXIES IN A UNIVERSE OF DATA' (IN SPANISH)	Quito, Ecuador Aug. 2023
<b>Ser Cientista (Being a Scientist). Faculdade de Ciências, Universidade de Lisboa</b> CO-SUPERVISION OF HIGH SCHOOL STUDENTS Guiding students on project 'O FADO das Galáxias' through one week of work (supv. C. Pappalardo)	Lisbon, Portugal Jul. 2022
<b>Festival Internacional de Ciência (FICA) - International Festival of Science</b> ANSWERED QUESTIONS ABOUT OBSERVATORIES IN THE STAND OF THE INSTITUTO DE ASTROFÍSICA E CIENCIAS DO ESPAÇO	Oeiras, Portugal Oct. 2021

## Service

MEMBER OF LOC IN DEEP 24 CONFERENCE	2024
REVIEWER IN OPEN RESEARCH EUROPE (BY EUROPEAN COMMISSION)	2024
REVIEWER IN CYCLE 11 DISTRIBUTED REVIEW PROCESS - ALMA OBSERVATORY	2024
MEMBER OF DATA VALIDATION TEAM - EVOLUTIONARY MAP OF THE UNIVERSE	2023 - Present

## Projects and Collaborations Membership

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### PROJECTS

#### Finding Lyman-alpha emitters through machine learning

PTCRIS: EXPL/FIS-AST/1085/2021 - P.I. A. PAULINO-ÁFONSO

FCT, Portugal

Jan. 2022 - Dec. 2023

### COLLABORATIONS

EVOLUTIONARY MAP OF THE UNIVERSE (EMU)

2020 - Present

SQUARE KILOMETRE ARRAY OBSERVATORY (SKAO) - EXTRAGALACTIC CONTINUUM SCIENCE WORKING GROUP

2020 - Present

SKA PATHFINDERS RADIO CONTINUUM SURVEYS WORKING GROUP (SPARCS)

2020 - Present

MULTI-OBJECT OPTICAL AND NEAR-INFRARED SPECTROGRAPH (MOONS)

2023 - Present

## Certificates

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RESPONSIBLE CONDUCT OF RESEARCH. STAGE 1 - BASIC COURSE - COLLABORATIVE INSTITUTIONAL TRAINING INITIATIVE (CITI)

2016

HUMAN SUBJECTS RESEARCH. STAGE 1 - BASIC COURSE - COLLABORATIVE INSTITUTIONAL TRAINING INITIATIVE (CITI)

2016

IELTS ACADEMIC 7.5/9.0

2017

## References

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