

ENRIQUE PAILLAS

Astrophysicist

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MOTIVATION

I'm an astrophysicist whose main research goal is to better understand the large-scale distribution of galaxies, in order to use its information to learn about the underlying cosmological model of our Universe. For this purpose, I make use of cosmological N-body simulations, as well as data from large-scale galaxy surveys, such as eBOSS.
I also have a keen interest in data science, with a focus on solving contin-
gent and interesting problems regarding geospatial analysis, finance and
business intelligence, employing machine learning, Big Data and artifi-
cial intelligence tools.

EXPERIENCE

Doctoral researcher

Pontificia Universidad Católica de Chile

📅 Mar 2017 – Ongoing 📍 Santiago, Chile

- Development of an automated, fully parallel pipeline to identify and analyse cosmic voids in cosmological simulations and galaxy survey data.
- Identification and analysis of cosmic voids in the BOSS and EBOSS surveys, with the aim of constraining the growth of structure around regions with low galaxy density.

Research assistant

CIGIDEN

📅 Sep 2019 – Ongoing 📍 Santiago, Chile

- Processing and analysis of Sentinel-2 satellite geospatial data for wildfire identification in Chile.
- Development of an automated pipeline for wildfire identification using machine learning and artificial intelligence on geospatial data.

Data science advisor

QUAOS

📅 Jan 2018 – Aug 2019 📍 Santiago, Chile

- Development of a pipeline to predict and manage bank remittances, based on the bank's historical transaction's data.
- Assessment study about the impact of Chilean's sulfuric acid production on the international market.

Research assistant

Universidad Andrés Bello

📅 Jan 2010 – Feb 2015 📍 Santiago, Chile

- Research under the supervision of Prof. Giuliano Pignata, calibrating astro-
nomical photometric data of type II supernovae from the Chilean Automatic
Supernovae Search (CHASE) project.
- Research under the supervision of Prof. Timo Anguita, calibrating the light-
curves of gravitationally lensed quasars, using data taken with the GROND
instrument.

TEACHING

Introduction to Astronomy (TA)

P. Universidad Católica de Chile

📅 2018

Differential Calculus (TA)

Universidad Andrés Bello

📅 2014

Differential Equations (TA)

Universidad Andrés Bello

📅 2013

Introduction to Mathematics (TA)

Universidad Andrés Bello

📅 2012

STRENGTHS

Observational astrophysics

Computational astrophysics

Code development

Project management

Public speaking

LANGUAGES

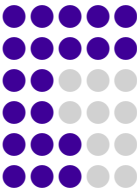
Spanish

English



PROGRAMMING SKILLS

Python
Fortran 90
C
SQL
Git
HPC



RELEVANT COURSES

Computational Astrophysics

Cosmology and Dark Matter

Probability and Statistics

Astrostatistics

Quantum Mechanics II

Introduction to Electrodynamics

Visualizing Geospatial data in Python

Introduction to Git for Data Science

Introduction to SQL for Data Science

PUBLICATIONS

The Santiago-Harvard-Edinburgh-Durham void comparison II: unveiling the Vainshtein screening using weak lensing

[Paillas et al., 2018, MNRAS, 484, 1149](#)

The evolution of the baryon fraction in haloes as a cause of scatter in the galaxy stellar mass in the EAGLE simulation

[Kulier, A. et al. \(including Paillas, E.\), 2019, MNRAS, 482, 3261K](#)

The Santiago-Harvard-Edinburgh-Durham void comparison I: SHEDding light on chameleon gravity tests

[Cautun, Paillas et al., 2017, MNRAS, 476, 3195](#)

DESCQA: An Automated Validation Framework for Synthetic Sky Catalogs

[Mao, Y.-Y. et al. \(including Paillas, E.\), 2018, ApJ, 234, 36](#)

Baryon effects on void statistics in the EAGLE simulation

[Paillas et al., 2017, MNRAS, 470, 4434](#)

SN 2009ib: A Type II-P Supernova with an Unusually Long Plateau

[Takáts, K. \(et al., including Paillas, E.\), 2015, MNRAS, 450, 3137](#)

SN2011hs: a Fast and Faint Type IIb Supernova from a Supergiant Progenitor

[Bufano, F. \(et al., including Paillas, E.\), 2014, MNRAS, 439, 1807](#)

SN 2009N: Linking normal and subluminous type II-P SNe

[Takáts, K. et al. \(including Paillas, E.\), 2014, MNRAS, 438, 368](#)

ORAL PRESENTATIONS

Constraining modified gravity using weak lensing by voids

[Dynamics of the Large-scale Structure](#)

 Munich, Germany, 2019

The SHED void comparison project: unveiling cosmology with void regions

[The Cosmic Web: From Galaxies to Cosmology](#)

 Edinburgh, UK, 2019

Unveiling modified gravity using cosmic voids

[AAA-SOCHIAS binational meeting](#)

 La Serena, Chile, 2018

Using voids to constrain modified gravity

[LSST-DESC Collaboration Meeting](#)

 San Francisco, Florida, USA, 2018

Baryon effects on void statistics

[Latin American Regional IAU Meeting](#)

 Cartagena de Indias, Colombia, 2016

Baryon effects on void statistics

[Mock Santiago: Preparing for next generation surveys](#)

 Santiago, Chile, 2016