

Research Experience

Postdoctoral Researcher • 2020 to present
@ Aix-Marseille Université, Centre de Physique de Particules de Marseille,
France

- I started working with supernovae cosmology, developing deep-learning classification techniques and studying the measurement of the growth-rate of structures with their peculiar velocities

Research Fellow • 2017 to 2020
@ University of Portsmouth, United Kingdom

- I lead the final baryon acoustic oscillations (BAO) and redshift-space distortions (RSD) measurements from the completed red galaxy sample of the extended Baryon Oscillation Spectroscopic Survey (Bautista et al. 2020)
- I lead the measurement of the BAO with the DR14 sample of eBOSS red galaxies (Bautista et al. 2018)
- I made the final improvements to the data reduction pipeline of eBOSS for the final data release (DR16)
- I started a project involving a PhD student on the reconstruction of a weak lensing map with a sample of Lyman-alpha forests from the Dark Energy Spectroscopic Instrument (DESI)
- I also joined the study of cross-correlations between 21cm maps of the Green Bank Collaboration and the galaxies from eBOSS to understand the galaxy gas connection on cosmological scales.

Postdoctoral Researcher • 2014 to 2017
@ University of Utah, United States of America

- I published the final BAO measurement from the Lyman-alpha forest sample from BOSS (Bautista et al. 2017)
- I was awarded the title of eBOSS Lead Data Scientist to overview the development of the automated data reduction
- I implemented several improvements to the data reduction pipeline
- Contribution to small projects using eBOSS spectra
- Visual inspection and quantification of systematics from first eBOSS data

Graduate Student • 2011 to 2014
@ Laboratoire Astroparticule et Cosmologie (APC), France

- I published the description and analysis of data-like simulations of Lyman-alpha forests (Bautista et al. 2015)
- Development of data analysis and tests of systematic effects with mock catalogs (Delubac, Bautista et al. 2015; Blomqvist, Kirkby, Bautista et al. 2015)
- New fast method to create correlated absorption fields for Lyman-alpha forest mock catalogs
- I published work with galaxy clustering estimators for BAO (Vargas Magaña, Bautista et al. 2013)

Education

Ph.D., Physics • September 2014

@ Université Paris Diderot, France

Title of thesis: Baryon Acoustic Oscillations in the Large Scale Structures of the Universe as seen by the Sloan Digital Sky Survey

M.S., Particle Physics and Cosmology • September 2011

@ Université Paris Diderot, France

Ingénieur de l'École Polytechnique • August 2010

@ École Polytechnique, France

B.S., Physics • August 2010

@ Universidade de São Paulo, Brazil

Mentoring

Computing internship M2 of Mariam Sabalbal • one month in 2021

Title of project: Cosmology with Type-Ia supernovae

Science first-steps M1 of Nattapon Preedasak • one month in 2020

Title of project: Dark-energy constraints with BAO and supernovae

Main supervisor of Ph.D. candidate Samantha Youles • 2017 to present

Title of thesis: Weak lensing in the Lyman-alpha forest

Co-supervisor of Ph.D. candidate Vikrant Kamble • 2015 to 2017

Title of thesis: Measuring the optical depth of the Lyman-alpha forest

Teaching

Thermodynamics (64 h) • 2013 - 2014

Physics of Materials (64 h) • 2012 - 2013

Electronics (64 h) • 2011 - 2012

@ Institut Universitaire de Technologie, France

Cosmology for high-school teachers (15 h) • 2011 - 2014

@ Observatoire de Paris, France

Responsibilities

Journal Club "Show Plot" organiser • 2021 to present

@ Centre de Physique des Particules de Marseille, France

Lead Data Scientist of the eBOSS Survey • 2016 to 2020

Architect of the SDSS • 2015 to 2020

Seminar organiser • 2018 to 2020

@ Institute of Cosmology and Gravitation, United Kingdom

Journal Club organiser • 2011 to 2014

@ Laboratoire Astroparticule et Cosmologie, France

Research Skills	<p>Cosmology : dark energy, baryon acoustic oscillations, clustering, redshift-space distortions, weak-lensing, supernovae</p> <p>Data analysis, mathematical and statistical modelling</p> <p>Spectroscopic data reduction</p> <p>Work within large international collaborations</p> <p>Public data release preparation and documentation</p> <p>Python, Java, C, C++, IDL</p>
Collaborations	<p>Sloan Digital Sky Survey III - Baryon Oscillation Spectroscopic Survey (BOSS)</p> <p>Sloan Digital Sky Survey IV - extended BOSS (eBOSS)</p> <p>Dark Energy Spectroscopic Instrument (DESI)</p> <p>Euclid Consortium</p> <p>Zwicky Transient Facility (ZTF)</p> <p>Rubin Observatory Legacy Survey of Space and Time (Rubin-LSST)</p>
Languages	<p>English - fluent</p> <p>French - fluent</p> <p>Spanish - fluent</p> <p>Portuguese - fluent</p>
Invited Schools as Lecturer	<p>From Pixel to Cosmology in the 2020s • 2020</p> <p>@ Quy Nhon, Vietnam</p> <p>Topic: Cosmology with the intergalactic medium</p> <p>Mexican AstroCosmoStatistics School • 2019</p> <p>@ Leon, Mexico</p> <p>Topic: Cosmology with the Lyman-alpha forest</p> <p>La Plata International School on Astronomy and Geophysics • 2018</p> <p>@ La Plata, Argentina</p> <p>Topic: Large-scale structures with the Lyman-alpha forest</p>
Invited Conferences	<p>Cosmology from Home • 2020</p> <p>@ cosmologyfromhome.com</p> <p>Title: The Cosmological Implications from eBOSS - 20 Years of Cosmology with SDSS</p> <p>235th American Astronomical Society Meeting • 2020</p> <p>Special session on final eBOSS cosmological results</p> <p>@ Honolulu, United States of America</p> <p>Title: Spectral Reductions, Redshifts, and Catalogs for Cosmology</p> <p>Mock Córdoba: galaxy formation for gravity and cosmology • 2019</p> <p>@ Córdoba, Argentina</p> <p>Title: Simulations for the Lyman-α forest</p> <p>53st Rencontres de Moriond • 2018</p> <p>@ La Tuile, Italy</p> <p>Title: Baryon Acoustic Oscillations at $z = 0.72$ with the eBOSS Luminous Red Galaxies</p>

CosmoSafari • 2017
@ Hluhluwe, South Africa
Title: extended Baryon Oscillation Spectroscopic Survey: first results

51st Rencontres de Moriond • 2016
@ La Tuile, Italy
Title: BAO Correlations at $z = 2.3$ with SDSS DR12 Lyman- α forests

Rencontres du Vietnam Cosmology • 2015
@ Quy Nhon, Vietnam
Title 1: The extended Baryon Oscillation Spectroscopic Survey
Title 2: BAO in the Lyman- α forests of BOSS quasars

BOSS workshop at American Physical Society • 2015
@ Baltimore, USA
Title: BAO in the Lyman- α forests of BOSS quasars

Outreach Events

Stargazing • 2020
@ Portsmouth, United Kingdom

Stargazing • 2019
@ Portsmouth, United Kingdom

Café Scientifique • 2018
@ Portsmouth, United Kingdom

Dancing with the Universe • 2018
@ Portsmouth, United Kingdom

Fête de la Science • 2012
@ Paris, France

References

Kyle Dawson (kdawson@astro.utah.edu)
@ University of Utah, USA

Will Percival (will.percival@uwaterloo.ca)
@ University of Waterloo, Canada

Julien Guy (jguy@lbl.gov)
@ Lawrence Berkeley National Lab, USA