OMAR ANTONIO RUIZ MACIAS

PhD Candidate in Astrophysics at Durham University

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EDUCATION

BSc Physics
Universidad de Colima
Fall 2009 – Fall 2013   Colima, Mexico

MSc Physics
CINVESTAV
Fall 2013 – Fall 2015   Mexico City, Mexico

PhD Physics
Durham University
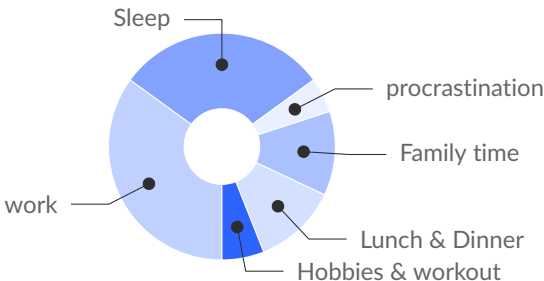Spring 2017 – Ongoing   Durham, UK

DISSERTATION WORK

Thesis work
- BSc. (2013). "Observational signatures of a cosmological phase transition between a barotropic fluid and dark energy."
- MSc. (2015). "Impact in the Cosmic Microwave Background of a phase transition between a barotropic fluid and Quintessence."

EXPERIENCE

Research stays

INAOE
June 2011 – August 2011   Tonantzintla, Puebla, Mexico
- Project: "The Nature of the X Ray Point Sources From M81 Galaxy"

ICG, Portsmouth University
March 2015 – May 2015   Portsmouth, UK
- Project: "Implementation of single-field slow-roll models of inflation in the ASPIC library"

Teaching Assistance
- Mathematical Methods to Master students – 2015
- Python to 1st year PhD students – 2019 & in 2020

A DAY OF MY LIFE

- Sleep
- procrastination
- Family time
- Lunch & Dinner
- Hobbies & workout
- work

LOOKING FOR

"A friendly and challenging work environment where I can growth professionally and personally."

ACHIEVEMENTS

🏆 **The University Physics Competition**
Bronze medal in the 2011 edition, team 323. Silver medal in the 2012 edition, team 446.

STRENGTHS

Hard-working   self learner
love the details   perfectionist

SKILLS

Programming

Python	●●●●●
LaTeX	●●●●●
HTML5 & CSS	●●●●○
JAVA	●●○○○
BASH	●●●○○
C++	●●○○●
Fortran	●●○○○
Wolfram Mathematica	●●●○○

Operating Systems

Linux	●●●●●
MacOS	●●●●●
Windows	●●●●○

Software & Tools

Visualisation (e.g. Matplotlib, Bokeh, d3.js)	●●●●●
Data handling/analysis (e.g. Numpy, scipy, astropy, pandas, PIL, HDF5)	●●●●●
Backend web apps (e.g. Web hosting, Flask, postgreSQL, redis)	●●●●●
Docker	●●●●○

Languages

English	●●●●○
Spanish	●●●●●

PUBLICATION LIST

📖 Publications

- **Omar Ruiz-Macias**, Pauline Zarrouk, Shaun Cole, Carlton M. Baugh, et al. (July 2020). "Characterising the target selection pipeline for the Dark Energy Spectroscopic Instrument Bright Galaxy Survey". In: *arXiv e-prints*. arXiv: `2007.14950 [astro-ph.GA]`.
- **Omar Ruiz-Macias**, Pauline Zarrouk, Shaun Cole, Peder Norberg, et al. (Oct. 2020). "Preliminary Target Selection for the DESI Bright Galaxy Survey (BGS)". in: *Research Notes of the AAS* 4.10, p. 187. DOI: `10.3847/2515-5172/abc25a`. arXiv: `2010.11283`.

WORKSHOPS & CONFERENCES

Segundo Taller de Gravitación, Física de Altas Energías y Cosmologia at ICF

📅 August 4 - 6, 2014   📍 Cuernavaca, Morelos, Mexico

- talk: *The contribution of black holes to Wouthuysen-Field signal and its detection by Sci-HI*

Mexican School on Cosmological Perturbation Theory at ICF

📅 August 1 - 3, 2016   📍 Cuernavaca, Morelos, Mexico

ΛCDM and Beyond: Cosmology Tools in Theory and in Practice. A CANTATA Cost-Action Summer School

📅 September 4 – 15, 2017   📍 Mon-Repos, Corfu, Greece

National Centre for Doctoral Training (CDT) Data Intensive Science Workshop

📅 October 25 - 17, 2017   📍 Cardiff, UK

DESI collaboration meeting

📅 December 4 - 7 2017, 2017   📍 SLAC National Accelerator Laboratory, CA, USA

DESI collaboration meeting

📅 May 23 - 25, 2018   📍 NOAO, Tucson, AZ, USA

Centre for Doctoral Training (CDT) Data Intensive Science Summer School in Artificial Inteligence and Machine Learning

📅 July 17 - 25, 2018   📍 UCL, London, UK

DESI collaboration meeting

📅 Oct. 16 - 20, 2018   📍 Barcelona, Spain

- talk: *BGS Star-Galaxy separation and Target selection.*
- talk: *BGS Survey Validation selection.*

DESI Imaging, Target Selection, Survey Validation Workshop

📅 March 25 - 28, 2019   📍 University of Utah in Salt Lake City, Utah, USA

- talk: *BGS target selection for SV and assessment of the quality cuts.*

DESI collaboration meeting

📅 July 8 - 12, 2019   📍 Berkeley, CA, USA

- talk: *DESI BGS target selection updates.*

STFC Data Intensive, Artificial Intelligence and Machine Learning Summer School

📅 July 21 - 26, 2019   📍 University of Sussex, Sussex, UK

DESI-UK meeting

📅 October 3 - 4, 2019   📍 Institute of Physics, London, UK

- tutorial-talk: *Jupyter example with DESI targets file*

REFEREES

Prof. Shaun Cole
@ shaun.cole@durham.ac.uk
✉ South Road
ICC Durham University, DH1 3LE, Durham, UK

Prof. Carlton Baugh
@ c.m.baugh@durham.ac.uk
✉ South Road
ICC Durham University, DH1 3LE, Durham, UK

Dr. Pauline Zarrouk
@ pauline.zarrouk@lpnhe.in2p3.fr
✉ 4 Place Jussieu, Tour 22
LPNHE, 75005, Paris, France

DESI Collaboration Survey Validation and Early Spectroscopy Workshop

📅 December 9 - 12, 2019   📍 Ohio State University, Columbus, OH, USA

- talk: *BGS MAIN target selection: Update*
- talk: *Large Galaxies bitmask validation with GAMA DR3.*

Spring 2020 DESI Collaboration Meeting

📅 March 9 - 13, 2020   📍 Tucson, AZ, USA

- talk: *BGS Main and SV Target Selection update: Star-galaxy separation, mitigation of systematics and clustering analysis.*

Survey Validation virtual meeting

📅 November 23 - 25, 2020   📍 virtual

- talk: *BGS SV updates.*

Winter DESI 2020 Virtual Collaboration Meeting

📅 December 7 - 11, 2020   📍 virtual

- talk: *DESI BGS Target Selection for SV: Updates for DR9.*