

CONTACT

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SKILLS

Python



Git



HPC



Fortran



Mathematica



Matlab



R



Linux/Bash



L^AT_EX



ELENA DE LA HOZ

Research Scholar - Observational Cosmology

EDUCATION

Ph. D.: Observational Cosmology

2019 - ongoing

Instituto de Física de Cantabria - Santander, Spain

Thesis: *Optimal treatment of foreground and systematics to exploit present and future CMB data.*

Advisors: Patricio Vielva & Enrique Martínez-González, (IFCA).

BSc.: Mathematics

2018 - ongoing

University of Cantabria - Santander, Spain

138/240 ECTS credits completed.

MSc.: Physics, Instrumentation and the Environment

2017 - 2018

University of Cantabria - Santander, Spain

Master Thesis: *Systematic Study of Metallic Nanoparticle Colloids' Color.*

Advisors: Francisco González & Rodrigo Alcaraz de la Osa, (UC).

BSc.: Physics

2013 - 2017

University of Cantabria - Santander, Spain

Exchange year at Princeton University 2016-2017 (GPA: 3.763/4).

Senior Thesis: *Gravitational Microlensing due to Dark Matter Subhalos.*

Advisor: Mariangela Lisanti, Princeton University.

WORK EXPERIENCE

Ph. D. Student

Feb 2019 - ongoing

Instituto de Física de Cantabria - Santander, Spain

My primary responsibility at IFCA is to conduct research studies in the field of the CMB. I am part of LiteBIRD and QUIJOTE collaborations, where I work in component separation, the study of cosmic birefringence, mitigation of systematics, and CMB anomalies. I teach half of the M1992: Programming in a Scientific Environment course of the Master in Particle Physics and Physics of the Cosmos. Moreover, I contribute to some outreach activities at IFCA.

Fellow Researcher

Jun-Aug 2018

Brown University - Providence, RI, USA

I conducted a study of the optical spectral properties of LaPtBi thin films. I measured the LaPtBi thin-film electric conductivity using time-domain THz spectroscopy and studied its plausible topological properties as a "Half-Heusler" material.

Collaboration Grant

2017-2018

University of Cantabria - Santander, Spain

Systematic study of the relationship of metallic nano-particles colloids color with their properties and surroundings. Moreover, a Monte Carlo method to study light transfer within heterogeneous media was developed.

ACHIEVEMENTS

Predoctoral Grant

Concepción Arenal Grant

Became a Concepción Arenal Grant holder and obtained a contract to work as PhD student at the University of Cantabria.

LiteBIRD

Member of LiteBIRD

LiteBIRD is a planned space CMB mission that aims to detect the footprint of the primordial gravitational waves from the polarized CMB.

QUIJOTE

Member of QUIJOTE

QUIJOTE is a ground experiment whose goal is to characterize the CMB polarization and other astrophysical emissions in the 10-42 GHz frequency range.

Sociedad Española de Astronomía

Member of SEA

Member of the Spanish Astronomical Society since 2022.

EuCAPT

Member of the LiteBIRD

Member of the European Consortium for Astroparticle Theory since 2022.

Summa cum laude

Premio Extraordinario Fin de Carrera

Awarded with the prize to the most outstanding Physics graduate from the University of Cantabria 2017.

Cum laude Scholarships

Fundación Botín Scholarship

Awarded with the Fundación Botín Scholarship for undergraduate students with outstanding curricula in: 2014-2015, 2015-2016, 2016-2017.

CREU-CEPYME Internship Grant

Banco Santander

Awarded with the 3-month paid internship program at Hisbalit, characterizing fosforescent materials (May-Aug 2016).

TEACHING EXPERIENCE

M1992: Programming in a Scientific Environment

2020, 2021

Master in Particle Physics and Physics of the Cosmos (UC-UIMP)

Imparted lectures about object-oriented programming, usage of numeric libraries, optimization, code parallelization and specific applications to astrophysical problems with Python.

MENTORING

Co-supervision of Master Thesis

2022

Master in Particle Physics and Physics of the Cosmos (UC-UIMP)

Diego Álvarez Ortega: *On the inpainting of incomplete Cosmic Microwave Background sky maps.*

Co-supervision of Master Thesis

2021

Master in Particle Physics and Physics of the Cosmos (UC-UIMP)

Laura Pérez Molina: *Obtaining temperature maps of the Cosmic Microwave Background anisotropies, correlated and uncorrelated with polarization.*

RESEARCH VISITS

Research Visit at MPA with Eiichiro Komatsu

Oct-Dec 2021

Max-Planck Institut für Astrophysik - Garching, Germany

Study of the detectability of the Rayleigh Scattering experienced by CMB photons at recombination with LiteBIRD.

Research Visit at CPB with Radek Stompór

Jun-Aug 2022

Centre Pierre Binétruy, UC Berkeley - Berkeley, CA, USA

Forecasts of the improvement obtained when the QUIJOTE-MFI2 instrument is incorporated to the SA and SO experiments in the Atacama Desert, Chile.

WORKSHOPS & CONFERENCES

Including only those where I have participated as speaker or poster presenter.

XV Reunión Científica de la SEA

Sep 2022

SEA - San Cristobal de la Laguna, Spain

Talk: *Diffuse polarized foregrounds from component separation with QUIJOTE-MFI.*

From Planck to the future of CMB

May 2022

INFN - Ferrara, Italy

Talk: *Diffuse polarized foregrounds from component separation with QUIJOTE-MFI.*

PanEx Galactic Science Group Journal Club Online

Mar 2022

Invited Talk: *Diffuse polarized foregrounds from component separation with QUIJOTE-MFI.*

REFERENCES

Eiichiro Komatsu

MPA Director

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Germany

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Radek Stompor

Directeur de Recherche & CPB Director

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Patricio Vielva

CSIC Tenured Scientist

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Spain

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OUTREACH

Outreach Talks at High-Schools

Outreach Talks about Observational Cosmology and the CMB at Colegio Santa María del Naranco (2021).

Open Doors Activities

Participation in Open Doors Activities for High-School Students (2019, 2021).

Participation in European Researchers' Night

Participation in outreach activities during the European Researchers' Night in Santander (2019, 2022).

Outreach Videos

Preparation of an outreach video answering questions of middle schoolers for the program "Expandiendo la Ciencia" (2019).

XVIII QUIJOTE Consortium meeting Online

Feb 2022

Talk: *Component separation in intensity with the QUIJOTE-MFI wide survey.*

56th Rencontres de Moriond. Cosmology CNRS - La Thuile, Italy

Jan 2022

Talk: *Diffuse polarized foregrounds from component separation with QUIJOTE-MFI.*

Fall LiteBIRD Global Screen-to-Screen meeting Online

Oct 2021

Poster: *Probing the Cold Spot Anomaly through Polarization Data.*

Winter LiteBIRD Global Screen-to-Screen meeting Online

Feb 2021

Poster: *Determination of Polarization Angles in CMB Experiments/Application to Component Separation.*

XVII QUIJOTE Consortium meeting Online

Jan 2021

Talk: *Component separation in polarization with the QUIJOTE-MFI wide survey.*

CMB systematics and calibration focus workshop Kavli IPMU & JSPS - Online

Dec 2020

Talk: *Determination of the Systematics Related to Polarization Angle Uncertainty and Its Impact on r .*

B-mode from Space MPA - Garching, Germany

Dec 2019

Poster: *On the Detection of Primordial CMB B-modes from Ground at Low Frequency.*

VII Meeting on Fundamental Cosmology Universidad Complutense & CIEMAT - Madrid, Spain

Sep 2019

Talk: *On the Detection of Primordial CMB B-modes from Ground at Low Frequency.*

COSMO19 RWTH Aachen University - Aachen, Germany

Dec 2019

Poster: *On the Detection of Primordial CMB B-modes from Ground at Low Frequency.*

SCHOOLS, WORKSHOPS & COURSES

BeyondPlanck hands-on tutorial Online. BeyondPlanck Collaboration.

Nov 2020

Deep Learning for Science School webinar series Online. Lawrence Berkeley National Laboratory - CA, USA.

Jul-Aug 2020

Summer School in Statistics for Astronomers XV Center for Astrostatistics at The Pennsylvania State University - PN, USA.

Jul 2019