Mariana V. Sastre

Curriculum Vitae

Personal information

email villamilsastre@astro.rug.nl

Website planetmariana

Professional profile

Astrophysics PhD student with specialisation in exoplanetology. With a background on geodynamical problems applied to extra solar planets, data analysis and observational techniques. Strong interest in planetary geophysics. Proven experience in scientific programming, writing and discussion. Very proactive person, with rapid learning skills and new ideas to collaborate in different work environments.

Education

2023- **PhD Student-Astrophysics**, Kapteyn Astronomical Institute-University of Groningen, The Netherlands.

2021-2023 **MSc. Astrophysics**, Astronomical Observatory of Geneva, Switzerland.

2016-2020 **BSc. in Geosciences**, University of Los Andes, Bogotá, Colombia.

2014-2019 **BSc. in Physics**, University of Los Andes, Bogotá, Colombia.

Research experience

2023- **Magma Ocean Evolution**, *(PhD research)*, Improvement of a self-consistent framework designed for magma ocean crystalisation coupled with atmosphere interaction including volatile content during its evolution, adding the posterior solid-state convection phase to characterise the final geodynamical regime of rocky exoplanets., **Advisors: Dr. Tim Lichtenberg & Prof. Inga Kamp**.
Kapteyn Astronomical Institute - University of Groningen

2023 **Modeling the tectonic regime on Earth-like exoplanets**, *(Master thesis)*, The objective is to run 2D simulations of planetary interiors in order to study the main parameters involved in the tectonic regime for different core/mantle ratios in Earth-like exoplanets, **Advisors: Prof. Emeline Bolmont & Prof. Luca Caricchi**.
University of Geneva

2022 **Mapping the Sun's active regions from SDO images to HARPS-N solar spectra**, *(Astrophysics Laboratory project)*, The objective was to perform an analysis to determine if there's any individual contribution to the relative spectra driven by Sun's activity, **Advisor: Dr. Michael Cretignier**.
University of Geneva

2021 **Searching for disintegrating planets in the TESS data**, *(Astrophysics Laboratory project)*, The objective was to optimize and implement a Python routine capable of identifying asymmetrical light curves observed by TESS telescope, **Advisors: Dr. Vincent Bourrier & Dr. Nathan Hara**.
University of Geneva

2019 **Spectroscopy of rocky bodies of the Solar system: The Moon and Mars**, *(Thesis in Physics)*, The objective was to identify the spectral signatures of the rock-forming minerals from the Moon and Mars with spectral data obtained at the astronomical observatory at University of Los Andes.

2018 **Episodic thermal convection in Enceladus Ice shell**, *(Thesis in Geosciences)*, The objective was to run simulations in 2D/3D in order to study the heat behavior on the icy moon crust.

Awards

2021 **Colombian Ministry of Science and Foundation COLFUTURO scholarship**, *Grant of $50.000 USD to start a science-related Master program outside Colombia*.

Computational skills

Advanced level lang. Python, JavaScript, html, p5js

Intermediate level lang. C/C++, Fortran

OS Gnu/Linux, Windows.

Specialized software IRAF, ArcGIS, Matlab, LaTeX, Geomatics, CitcomS, ASPECT, BurnMan

Selected contributed talks

2023 **Rocky Worlds III Conference**, *Speaker*, ETH, Zürich, Switzerland.

2019 **European Rover Challenge**, *Competitor*, Planet partner, Kielce, Poland.

II Latinamerican astrobiology congress, *Speaker*, National University of Colombia.

DEI Leadership

2021-Current **Organizing committee member**, *Mentoring program of the Colombian Astronomy Network of Students (RECA)*.

2019-Current **Organizing commitee member**, *Conference series on the inclusion of women in astronomy*, Colombian network of women working on astroscience research. (CHIA).

Job Experience

2020-2021 **Geophysics GPR International Inc**, *Geophysicist Jr*, Bogotá, Colombia.

Teaching assistant experience at the University of Los Andes

2019 **Solid state physics and condensed matter**, *Physics Department*.

2018 **Advanced seismology**, *Geosciences Department*.

Remote Sensing, SIG and GPS, *Geosciences Department*.

Introduction to observational astronomy, *Physics Department*.

Languages

Spanish Native

English Fluent

French B2 (DELF)