Contact

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Honours and Awards

ESA Comet Interceptor Science Working Group Member, 2022
Most Innovative Learning Experience nomination, Queen's University Belfast Education Awards, 2019
Most Inspirational Teaching nomination, Queen's University Belfast Education Awards, 2018
Asteroid "10694 Lacerda" named after me, 2017
Royal Society APEX Award 2017 for interdisciplinary research (£100k)
Principal Investigator of Large Programme at the European Southern Observatory 2014
Max Planck Research Group Leader, 2013 (€750k)
Leverhulme Research Programme Grant 2013 (£150k)
Michael West Research Fellowship, 2010 (£200k)
Royal Society Newton Fellowship, 2008 (£100k)
Portuguese Science Foundation Postdoc Fellowship, 2005 (€50k)
2003 Harvard-Smithsonian SAO Predoctoral Fellowship

Education

PhD in Astrophysics, 2005,
Leiden University
MSc in Physics, 2000,
Lisbon University , PT

Languages

Native: Portuguese
Fluent: English
Good: Dutch, Italian
Basic: French, Spanish, German
Learning: Danish

Profile

I am a dynamic and creative person with a strong background in astrophysics research, a passion for numbers and computers, and a knack for teaching.

With strong analytical problem-solving skills and extensive experience in scientific computing, I am eager to find directly impactful applications of my knowledge.

My track record includes state-of-the-art research in astrophysics, data analysis, and simulation, and an extensive list of peer-reviewed publications. I enjoy working in diverse teams and have mentored PhD students to become accomplished scientists.

I thrive on continuous learning, embracing new challenges and technologies. I am committed to bridging the gap between scientific research and practical outcomes, driving progress for society at large.

I am passionate about communicating the beauty and value of science to wider society.

Work Experience

Scientific Programme Coordinator — 2024–Present

NL Space Campus, the Netherlands

My role involves overseeing the development and implementation of scientific initiatives, fostering collaboration among stakeholders, and facilitating the translation of research into practical applications within the space sector. My focus lies in:

- Developing and overseeing scientific research programmes aimed at advancing space technology and its terrestrial applications;
- Connecting scientific research, ideas and talent with potential technological applications and business opportunities;
- Setting up a new ESA Φ-lab laboratory to achieve the goals above.

Scientific Advisor & ESA Technology Broker — 2022–Present

Instituto Pedro Nunes, Coimbra, Portugal

I advise on the translation of space-related knowledge and technology into practical solutions. My focus lies in:

- Assisting the development of innovative products and solutions through the use of ESA space data and technology;
- Encouraging interdisciplinary collaboration;
- Designing events that boost and inspire innovation.

Founder, Teacher and Baker at Miolo — 2019–2021

Deventer, the Netherlands

During the pandemic I founded Miolo, a one-person's business involving teaching, and baking and delivering sourdough bread. This involved registering at the KvK, equipping a small bakery, designing branding, creating a website and a business strategy. I tutored high school students from the Netherlands, Portugal, Germany, the UK and the US via Zoom on Maths, Physics and Astronomy.

Publications

14 first author refereed papers
51 co-authored refereed papers
188 other publications
Link to list online

Programming Languages and Computing Tools

Capable: Python (core, numpy, pandas, statsmodels, scikit-learn, matplolib, blender, astropy), VS Code, Mathematica, git, *nix and tools (zsh, vim, sed, awk), LLMs, Obsidian
Used: R, C, Fortran, emacs, IDL, MATLAB, BASIC, POVRay.
Learning: rust, APL

Professional Service

Science Review Panelist for the NASA Discovery space mission program (2010, 2015, 2019) and the ROSES grants (2008).
Reviewer for Science, Astrophysics Journal and Letters, Astronomical Journal, Astronomy & Astrophysics, Monthly Notices of the Royal Astronomical Society, and Icarus.

Selected Invited Talks

AOGS 2014 Annual Meeting, Sapporo, Japan; Jul 2014; Title: *"TNOs Are Cool", A Herschel Space Observatory Survey of the Outer Solar System*.
UK National Astronomy Meeting, Manchester, UK; Mar 2012; Title: *A Herschel Survey of the trans-Neptunian Belt*.
ESO-Chile Workshop on Solar System & Minor Bodies, Santiago; Aug 2011; Title: *Extreme and Extremely Tilted Objects*.
European Planetary Science Congress, Rome; Sep 2010; Title: *Haumea as seen by the Herschel Space Observatory*.
RAS Meeting, Burlington House, London; Nov 2009; Title: *The Dark Red Spot on Dwarf Planet Haumea*.
Conference "Binaries in the Solar System", Steamboat Springs, CO; Aug 2007. Title: *The abundance of contact binaries in the Kuiper belt*.

Assistant professor (lecturer) of Astrophysics 2016–2019

Queen's University Belfast, UK

In addition to continuing my research (see below), I coordinated and taught first year Mathematics, Computational Modelling in Physics and Laboratory Science. My teaching was held in high regard by the students, who nominated me for Most Inspiring and Most Innovative lecturer in consecutive years. During this period, my research achievements were recognised with the honour of having an asteroid named after me by the Int'l Astronomical Union: (10694) Lacerda.

I teamed up with Marilina Cesario, a medievalist studying 10th century Anglo-Saxon manuscripts, and received a Royal Society APEX award to study comets and how medieval scholars saw and interpreted them. This led to extensive outreach initiatives including a video by the BBC.

Research Group Leader 2013–2016

Max Planck Institute for Solar System Research, Göttingen, Germany

I used a €750k budget to form and coordinate a research group that continued to address my science goals. Some of my tasks were:

- Designing a research programme combining data from the ESA Rosetta mission and telescope observations with n-body simulations to simulate the formation of comets;
- Supervising Rosita Kokotanekova who successfully defended her PhD dissertation and went on to become an ESO Fellow. Her work on comet rotation and surface evolution is state-of-the-art;
- Supervising Sebastian Lorek, who received a cum laude PhD on numerical simulations of planetesimal formation and went on to become a scientist at Globe Institute in Copenhagen;
- Organising open-minded interdisciplinary seminars, inviting world-class scientists to come to Göttingen.

Postdoctoral Researcher 2005–2013

Various locations

Following my PhD, I conducted scientific research at a number of institutes in different countries. In reverse chronological order:

- Michael West Fellow, Queen's University Belfast, UK (2011-2013);
- Royal Society Newton Fellow, QUB, UK (2009-2011);
- Postdoctoral Fellow, Institute for Astronomy, Honolulu, USA (2006-2009);
- FCT Postdoc Fellow, Coimbra University, Portugal (2005-2006).

At QUB, I designed and coordinated the Astrophysics department Outreach Programme, which included a Lecture Series for which I invited, e.g., Reinhard Genzel (black holes), Lucie Green (the Sun), Rob Jedicke (killer asteroids), João Magueijo (cosmology).

My research deals with the physical properties of small icy bodies (e.g. comets), and aims to learn how planetesimals formed 4.5 billion years ago. It involves the collection of huge datasets using telescopes and automated surveys, and their analysis, interpretation and simulation.