

Isabelle Santos, PhD.

Astrophysics and planetology

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Profile: I have strong skills in applied mathematics and extensive knowledge in astrophysics and planetology, work well on a team and just can't stop getting things done.

Goals: Put my experience in applied mathematics to work in planetology

Work Experience

- 2019-... Using machine learning to improve photometric redshift measurements for Euclid at the Astronomy Department of the University of Geneva.
- 2019 Master thesis studying filamentary structures that appear in Faraday tomography of the interstellar medium.
- 2015 Master thesis assessing machine learning techniques for anomaly-based intrusion detection systems for embedded avionics at Rockwell-Collins in Toulouse, France.
- 2014-2015 Intern consultant overviewing aerospace activities at *New Generation Power* in Chicago.
- 2012-2014 Translating technical manuals from French to English for airlines

Teaching

- 2020 Supervising an astrophysics master student project on photometric redshift determination at the University of Geneva.
- 2018-2019 Training the science facilitators in astronomy for Planète Sciences.
- 2016-2018 Measure, integration and probability lecturer for third year engineering students at ÉNAC.

Education

- 2018-2019 Master of Science in Astrophysics, Space Science and Planetology at the University of Toulouse
- 2016-2019 PhD in applied mathematics on numerical methods for solving stochastic differential equations at the University of Toulouse, France
- 2014-2015 Master of Computer Science at the Illinois Institute of Technology
- 2011-2014 Master of Engineering in Computer Science for aeronautics and space in Toulouse
- 2008-2011 Maths and physics in preparation for competitive exams to French engineering schools

Publications

Isabelle Santos. *Fonctions de navigation harmoniques stochastiques: application à la planification robuste de trajectoires avion*. PhD thesis, Université Toulouse 3 - Paul Sabatier, 2019.

Isabelle Santos, Stéphane Puechmorel, and Guillaume Dufour. First order Hadamard variation of the harmonic navigation function on a sphere world. *Mathematical and Computational Applications*, 23, 2018.

Talks, seminars, conferences

Seminars

- *Understanding what makes template fitting or machine learning provide better photometric redshift*, Ecogia Science meeting, September 8, 2020
- *The AdaBoost algorithm and applications to photometric redshift determination*, invited speaker, EPFL, May 16, 2020
- *Filamentary Structures in Faraday Tomography around the Draco Nebula*, Ecogia Science meeting, May 4, 2020
- *Combining template fitting and machine learning*, Ecogia Science meeting, February 12, 2020
- *Creating a Meta-Classifer for Determining Photometric Redshift*, Swiss Euclid days, February 4, 2020
- *Stochastic Harmonic Navigation Functions*, ENAC PhD day, March 6, 2019

Outreach

- *Measuring the distance of astronomical objects*, Astrochablais, November 12, 2020
- *Fostering diversity in astronomy*, Astronomy camp, Barret-sur-Méouge, August 10, 2020
- *Planetary seismology*, Club Astro ENAC, October 2018
- *What's a galaxy?*, Rendez-vous des jeunes mathématiciennes, November 2017

Transversal Skills

<i>Languages</i>	Mother tongue: French and English Conversational German and Italian ; Basic Chinese
<i>Software</i>	Python; C; Fortran; Git; L ^A T _E X; astropy; AstroImageJ; SAO ds9; TOPCAT

Interests and extra-curricular activities

- Music: piano and violin at the Conservatory in Paris; euphonium in the VanderCook symphonic band
- Sports: karate, futsal and biking
- Member of the ENAC debate team