

Arthur LE SAUX

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Contact Information

🏠 Physics & Astronomy, University of Exeter,
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Experience

- 2019 – Present **Postgraduate Research Student**, Physics & Astronomy, University of Exeter, UK
Co-direction: CRAL, Ecole Normale Supérieure, Lyon, Université de Lyon, France
Supervisors: Prof. Isabelle Baraffe & Dr. Thomas Guillet
*Understanding **mixing processes in stars** using **hydrodynamical simulations***
- 2019 **Research Intern**, AIM, CEA, Université Paris-Saclay, Gif-sur-Yvette, France
Supervisors: Dr. Rafael A. García & Dr. Lisa Bugnet
*Identification and **classification of pulsating stars** by combining classical **asteroseismology** and **intelligent methods***
- March 2019 **Observation Trainee**, IRAM, Granada, Spain
Supervisor: Dr. Pierre Guillard
*Turbulence and proto-stellar **outflows mapping** in L1251-A*
- 2018 **Research Intern**, Laboratoire de Météorologie Dynamique, Paris, France
Supervisor: Dr. Sébastien Lebonnois
*Study of large-scale **gravity waves** in the deep **atmosphere of Venus***
- Summer 2017 **Research Intern**, Physics & Astronomy, University of Exeter, UK
Supervisor: Prof. Isabelle Baraffe
*Theoretical and numerical approach of **hydrodynamic processes in stellar interiors***
- 2017 - 2018 **Research Project**, Institut des Nanotechnologies de Lyon, Ecully, France
Supervisors: Dr. Bertrand Vilquin & Dr. Pedro Rojo Romeo
*Theoretical and practical study on **hyperbolic metamaterials***

Education

- 2019 – Present **PhD in Astronomy & Astrophysics** (Ongoing), University of Exeter, UK
Expected March 2023
- 2019 **Master of Science**, Observatoire de Paris, France
Astronomy, Astrophysics & Space Engineering
Specialisation: Stellar physics, Asteroseismology, Numerical Methods, Data Science
- 2018 **Master of Engineering**, Ecole Centrale de Lyon, France
Specialisation: Hydrodynamics, Nanotechnologies and Biotechnology
- 2015 **Bachelor of Science**, Sorbonne Université, Paris, France
Mechanical Engineering
Specialisation: Fluid dynamics, Acoustics, Thermal Physics
- 2011 **High school Diploma**, with Honours, Lycée Alphonse Daudet, Nîmes, France

Grants & Awards

- 2021 Kavli Summer Program fellowship
2021 1st Prize EMPS PGR Conference Presentations, Exeter, UK
2019 PhD Studentship (3.5 years), University of Exeter, UK
2019 Observation time (36h), IRAM 30m telescope, Granada, Spain

Publications & Proceedings

- **Le Saux A.**, Guillet T., Baraffe I. et al., 2022, [A&A \(in press\)](#), [arxiv:2202.00801](#)
Two-dimensional simulations of solar like models with artificially boosted luminosity. II. Impact on internal gravity waves
- Baraffe I., Constantino T., Clark J., **Le Saux A.** et al. 2021, [A&A \(in press\)](#), [arxiv:2201.00200](#)
Local heating due to convective overshooting and the solar modelling problem
- Baraffe I., Pratt J., [...], **Le Saux A.** et al. 2021, [A&A 654, A126](#)
Two-dimensional simulations of solar like models with artificially boosted luminosity. I. Impact on convective penetration
- **Le Saux A.**, Bugnet L., Mathur S., Breton S. N., García R. A. 2019, [SF2A 2019 Proceeding](#)
Automatic classification of K2 pulsating stars using Machine Learning
- Breton S. N., Bugnet L., Santos A. R. G., **Le Saux A.** et al., 2019, [SF2A 2019 Proceeding](#)
Determining surface rotation periods of solar-like stars observed by the Kepler mission using machine learning techniques
- Lebonnois S., Garate-Lopez I., **Le Saux A.**, Plougonven R. 2019, [21st EGU General Assembly](#)
Wave activity below the clouds of Venus with the IPSL Venus GCM

Publications in preparation

- **Le Saux A.**, Bellinger E. P., Basu S. & Ball W., *An asteroseismic expedition for the missing physics in stellar evolution – Non-linear inversion for stellar structure*
- Bugnet L. * & **Le Saux A.** * et al., *Unveiling stellar nature through oscillations pattern recognition* (*Both authors contribute equally to this work)
- Vlaykov D., Baraffe I., Constantino T., Goffrey T., Guillet T., **Le Saux A.** et al., *Impact of radial truncation on global 2D hydrodynamical simulations for a Sun-like model*

Conferences & Talks

- 2022 Good Vibrations seminar series, online
- 2021 Astrophysics group seminar, University of Exeter, UK
- 2021 MUSIC Team Talk, online
- 2021 Kavli Summer Program in Astrophysics, online
- 2021 MUREX festival, Toulon, France (Invited Talk with L. Fourdrinier)
- 2021 Cool Stars 20.5, online ([Poster](#))
- 2021 EMPS PGR Conference 2021, Exeter, UK (Talk + Poster)
- 2020 Exosystem 1, Paris, France (Poster)
- 2019 Meeting SF2A, Nice, France (Poster)

Teaching & Outreach

- 2022 Co-supervision of a Master student from ENS Lyon, France
- 2022 Committee role for the organisation of the EMPS PGR conference 2022 (in April) and design of the conference website
- 2020 - Present Demonstrator for 2nd year Physics class in Quantum Mechanics, Electromagnetism, Thermal Physics and Condensed Matter
- 2020 PULSE (Art Exhibition on the theme of asteroseismology) in collaboration with the artist Léo Fourdrinier, L'Axolotl Gallery, Toulon, France ([PULSE presentation](#))
- 2019 Co-supervision of a Master student from ENS Lyon, France