

Arthur LE SAUX

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Contact Information

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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

- Vlaykov D., Baraffe I., Constantino T., [...], **Le Saux A.** et al. 2022, [MNRAS 514, 1](#)
Impact of radial truncation on global 2D hydrodynamical simulations for a Sun-like model
- **Le Saux A.**, Guillet T., Baraffe I. et al., 2022, [A&A 660, A51](#)
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 659, A53](#)
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

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*
- **Le Saux A.**, Smith K., Bugnet L. et al., *Unveiling stellar nature through oscillations pattern recognition*
- **Le Saux A.**, Baraffe I., Guillet T., et al., *Two dimensional simulations of a 5 solar mass star model with artificially enhanced luminosity*

Conferences & Talks

- 2022 TASC13/KASC6 workshop, Leuven, Belgium (Poster)
- 2022 Cool Stars 21, Toulouse, France (Contributed talk, plenary session)
- 2022 PNPS workshop: Codes for stellar physics, Meudon, France (Talk)
- 2022 EAS meeting 2022, Session 21 (Contributed talk)
- 2022 Good Vibrations seminar series, online (Seminar)
- 2021 Astrophysics group seminar, University of Exeter, UK (Seminar)
- 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 student from University of Toronto (Canada) in the context of [Simons-NSBP Scholars Program 2022](#) hosted by the CCA, Flatiron Institute (New-York, USA)
- 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 astero-seismology) 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