

# Solène Chabanier

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Computational Research Division  
Computational Cosmology Center

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## SCIENTIFIC INTERESTS AND TECHNICAL SKILLS

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### Observational Cosmology

Large-scale structures, Ly $\alpha$  forest, Clustering, Massive neutrinos, Dark matter, Dark energy

### Numerical Methods

Data mining, Spectral analysis, High performance computing, Cosmological hydrodynamical simulation

### Large-scale Astrophysics

Galaxy formation, Numerical modeling, Supermassive Black Hole and AGN feedback, Stellar feedback

## RESEARCH EXPERIENCES

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### Postdoctoral Researcher,

Computational Research Division, Lawrence Berkeley National Laboratory  
Advisor: Zarija Lukic

2020–Present  
Berkeley, CA USA

### PhD in Cosmology and Astrophysics,

CEA-Saclay, Paris-Saclay University  
Advisors: Nathalie Palanque-Delabrouille and Frédéric Bournaud

2017–2020  
Saclay, FR

*Neutrino and dark matter cosmology with the Lyman-alpha forest: the interplay between large-scale evolution and small-scale baryonic physics*

### Master's thesis,

Department of Physics, Imperial College  
Advisor: Jonathan Pritchard

May 2017 - Sept 2017  
London, UK

*Topology of percolating structures during the Epoch of Reionization by means of Minkowski Functionals*

### Self Study Project,

Department of Physics, Imperial College  
Advisor: Steve Warren

Sept 2016 - Mar 2017  
London, UK

*Search for observational evidences of Cosmic Strings*

## EDUCATION

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### Engineering Degree in Computer Sciences,

Télécom Paris  
France's leading engineer school in Computer Science

2014-2017  
Paris, FR

### MS in Fundamental Physics, with high honors

Department of Physics, Imperial College London

2016-2017  
London, UK

### MS in Computer Sciences,

EURECOM

2015-2016  
Sophia Antipolis, FR

### Classes Préparatoires in Physics, Mathematics and Chemistry,

Lycée Pasteur

2012-2014  
Neuilly, FR

*Intensive 2-year scientific track to prepare competitive exams for selective French Grandes Ecoles*

**PRIZES**

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<b>Best PhD Thesis</b> International Astronomical Union	May 2021
<b>Best PhD Thesis</b> PHEENICS graduate school of Paris-Saclay University	May 2021

**APPROVED PROPOSALS**

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<b>The ACCELL2 simulations (Principal Investigator)</b> 200k GPU hours allocations, Institut du développement des Ressources en Informatique Scientifique (IDRIS)	2020-2021
<b>Extreme-Horizon Simulations (Co-Principal Investigator)</b> 58 million CPU hours allocation on 25.000 CPUs, Très Grand Centre de Calcul (TGCC)	2019-2020

**INVITED TALKS AND CONFERENCE PRESENTATIONS**

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<b>(invited) BCCP Seminar</b> University of California Berkeley	Mar 2021 Berkeley, US
<b>(invited) Seminar</b> University of Nottingham	Jan 2021 Nottingham, UK
<b>(invited) Action Dark Energy 2020</b> LPNHE (online)	Oct 2020 Paris, Fr
<b>(invited) Seminar</b> University of Zurich UZH (online)	Sep 2020 Zurich, CH
<b>(invited) Workshop Euclid Cosmological Simulation Working Group</b> Institut de Ciències de l'Espai	Nov 2019 Barcelona, ES
<b>(invited) INPA Seminar</b> Lawrence Berkeley National Laboratory	Nov 2019 Berkeley CA, US
<b>(invited) FLASH Seminar</b> University of Santa Cruz	Nov 2019 Santa Cruz CA, US
<b>(poster) Cosmic Controversies</b> University of Chicago	Oct 2019 Chicago IL, US
<b>(contributed) Ramses User Meeting</b> Niels Bohr Institute	Sept 2019 Copenhague, DK
<b>(contributed) Lines in the Large Scale Structure</b> University of Aix Marseille	Jul 2019 Marseille, FR
<b>(contributed) eBOSS-DESI ANR France Meeting</b> CEA-Saclay	May 2019 Saclay, FR
<b>(contributed) International eBOSS collaboration Meeting</b> Jussieu University	Dec 2018 Paris, FR
<b>(contributed) eBOSS-DESI ANR France Meeting</b> Astrophysics laboratory of Marseille	Sept 2018 Marseille, FR

**OUTREACH, TEACHING AND SERVICES**

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<b>Referee for PASA</b> <i>Publications of the Astronomical Society of Australia</i>	2020-
<b>PhD and Postdoc representative</b> Representative of PhD students and postdocs at DPhP/CEA-Saclay	2018-2020 Saclay, FR
<b>Virtual Reality Movie: Dive Into The Extreme-Horizon</b> Development of a virtual reality movie for public outreach	2020 Saclay, FR
<b>Contribution to CEA2035 Prospective Strategy</b> Invited, as PhD student, to contribute to the CEA2035 prospective strategy <i>Discussions about major scientific goals of CEA in 2035</i>	Mar 2020 Saclay, FR
<b>Teaching Assistant</b> Astronomy and Astrophysics Doctoral School of Ile de France <i>Numerical simulations and high performance computing</i>	Jan 2020 Paris, FR
<b>Public Conference and Radio interview</b> Astronomical Society of Nantes, <i>Structures in the cosmos: what they tell us about neutrinos and warm dark matter</i>	Jan 2020 Nantes, FR
<b>Public Conference</b> Annual Astronomy Festival <i>Numerical Simulations in Cosmology</i>	Aug 2019 Fleurance, FR
<b>Workshop for informed audience</b> Annual Astronomy Festival <i>Probing the neutrinos masses with Cosmology</i>	Aug 2019 Fleurance, FR
<b>French eBOSS-DESI Workshop organization</b> Organization of the eBOSS-DESI collaboration workshop, 60 people	May 2019 Paris, FR
<b>Public Conference</b> Annual Science Week, <i>The saga of neutrinos: from the infinitely small to the infinitely large</i>	Oct 2018 Paris, FR
<b>Mentoring</b> <i>High-school and Classe Préparatoire students in maths and physics</i>	2016-2020
<b>Organizer of the Télécom Paris Career's Fair</b> <i>Organization of school's recruitment fair in Paris that welcomed 5000 visitors and 113 participating companies</i>	2014 - 2015