

# Simon Allais

*PHD student in mathematics*  
*at the ÉNS de Lyon*  
Agrégé en mathématiques

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## Education

- 2018–2020 **PhD in mathematics**, *École Normale Supérieure de Lyon*, Lyon.  
On periodic points in higher dimension Hamiltonian dynamics,  
under the supervision of Marco Mazzucchelli.
- 2017–2018 **Master 2 in mathematics**, *École Normale Supérieure de Lyon*, Lyon.  
2017 **Get the *agrégation de mathématiques***, *Eighth*.
- 2015–2016 **Master 1 in mathematics**, *École Normale Supérieure de Lyon*, Lyon.
- 2014–2015 **Licence in mathematics**, *École Normale Supérieure de Lyon*, Lyon.
- 2012–2014 **Classes préparatoires MPSI-MP\***, *Lycée Hoche*, Versailles.

## Internships

- 2018 **Generating functions**, *Marco Mazzucchelli*, Lyon.  
Study of a proof of the symplectic Camel theorem.
- 2016 **Quantitative geometry**, *Florent Balacheff*, Villeneuve d'Ascq.  
Study of some harmonic and metric inequalities.
- 2015 **History of science**, *Frédéric Chambat*, Lyon.  
Participation to the critic reprint of D'Alembert's *Réflexion sur la cause générale des vents*.

## Teaching

### Courses

- 2018–2020 **Geometry**, *ÉNS de Lyon*, Lyon.  
Course preparing the *agrégation*.
- 2017–2018 **Differential calculus and submanifolds**, *ÉNS de Lyon*, Lyon.  
Informal course preparing the *agrégation*.

### Tutorials

- 2019–2020 **Advanced geometry**, *ÉNS de Lyon*, Lyon.  
M1 students.
- 2018 **Complex analysis**, *ÉNS de Lyon*, Lyon.  
L3 students.
- 2015–2018 **Khôlles**, *lycée du Parc*, Lyon.  
MPSI and BL.

## Languages

- French native speaker
- English fluent

## Computer skills

Publishing HTML5 & CSS, LaTeX, Word  
languages  
Formal and Maple, Scilab  
scientific  
calculus  
Programming C & C++, Caml light, PHP  
languages

## Participation in seminars

- 2020 Symplectic Zoominar, CRM-Montreal, Princeton/IAS, Tel Aviv, and Paris  
Séminaire de Géométrie Hamiltonienne, IMJ-PRG
- 2019 Ruhr-Universität Bochum  
Séminaire de Topologie, Institut Fourier
- 2018 Séminaire de Systèmes dynamiques, Analyse et Géométrie, LMA  
Geometry Seminar, LIGAT

## Papers and Preprints

- Simon Allais. Improvement and generalization of Papanicolaou's lemma. *Grad. J. Math.*, 3(1):31–36, 2018.
- Simon Allais. A Contact Camel Theorem. *International Mathematics Research Notices*, 11 2019. rnz200.
- Simon Allais. On periodic points of Hamiltonian diffeomorphisms of  $\mathbb{C}P^d$  via generating functions. *arXiv e-prints*, page arXiv:2004.02165, April 2020.
- Simon Allais. On the growth rate of geodesic chords. *Differential Geometry and its Applications*, 73:101668, 2020.
- Simon Allais. On the Hofer-Zehnder conjecture on  $\mathbb{C}P^d$  via generating functions (with an appendix by Egor Shelukhin). *arXiv e-prints*, page arXiv:2010.14172, October 2020.
- Simon Allais and Tobias Soethe. Homologically visible closed geodesics on complete surfaces. *arXiv e-prints*, page arXiv:2005.10546, May 2020.