

Dr. Thomas SELIG  
Born on December 22<sup>nd</sup>, 1987, in Paris, France  
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## **Formation:**

### *July 2015-present:*

Research Associate at the CIS (Computer and Information Sciences) Department, University of Strathclyde, Glasgow. Research funded by EPSRC grant EP/M015874/1: “New combinatorial perspectives on the abelian sandpile model”, under the supervision of Dr Mark Dukes and Prof. Einar Steingrímsson.  
Sept. 2017: Visiting researcher at the Center for Applied Mathematics, Tianjin University.

### *Jan.-June 2015:*

ATER (“Attaché Temporaire d'Enseignement et de Recherche”, Temporary Research and Teaching Assistant) at the IMB (“Institut de Mathématiques de Bordeaux”), University of Bordeaux.

### *2011-2014:*

PhD student in Computer Science under the supervision of Prof. Jean-François Marckert at the LaBRI (“Laboratoire Bordelais de Recherche en Informatique”), University of Bordeaux.  
Thesis title: “Convergence of maps and the sandpile model”.  
Defended my PhD Thesis in December 2014, awarded the title of Doctor in Computer Science of the University of Bordeaux, Mention Très Honorable.

### *2010-2011:*

Fourth and final year of study at the ENS (“Ecole Normale Supérieure”) in Paris.  
Defended my Masters Thesis “*Gluing leaves of large random binary trees*”, prepared under the supervision of Prof. Jean-François Marckert. Members of the Jury: Prs. Philippe Duchon, Guillaume Chapuy and Mireille Bousquet-Mélou.  
Awarded my Masters degree in “Mathématiques : Probabilités et Statistiques” by the University Paris 11, mention Bien.  
Began my PhD at the LaBRI under the supervision of Prof. Jean-François Marckert.

### *2009-2010:*

Third year of study at the ENS.  
Completed the second year of my Masters degree at the University Paris 11.

### *2008-2009:*

Second year of study at the ENS.  
Began the second year of my Masters degree at the University Paris 11.  
Awarded the “Agrégation de Mathématiques – Option Probabilités et Statistiques”, ranked 47<sup>th</sup>.

### *2007-2008:*

First year of study at the ENS.  
Awarded my Bachelors degree in Mathematics by the University Paris 7, Mention Bien.  
Defended my short Thesis for first year of Masters degree “L’intégration dans les groupes topologiques localement compacts et ses applications”, co-written with Xiao Lu, under the supervision of Prof. Thierry Lévy.  
Awarded the first year of my Masters degree in Mathematics by the University Paris 7, Mention Assez Bien.

### *2005-2007:*

Second year of Preparatory Classes in Mathematics (MP\*) at the Lycée Louis-le-Grand, Paris.  
Admitted to the ENS, ranked 30.

### *2005-2006:*

First year of Preparatory Classes in Mathematics (MPSI) at the Lycée Louis-le-Grand, Paris.

## **Academic responsibilities:**

Member of the organising committee for the 26<sup>th</sup> British Combinatorial Conference, held in July 2017 at the University of Strathclyde.

Reviewer for the following journals:

- Electronic Journal of Combinatorics;
- Australasian Journal of Combinatorics.

## **Publications:**

*Permutation graphs, tiered trees and the Abelian sandpile model*

With Mark Dukes, Jason Smith and Einar Steingrímsson.

In preparation.

*EW-tableaux, permutations and recurrent configurations of the sandpile model on Ferrers graphs*

With Mark Dukes, Jason Smith and Einar Steingrímsson.

In preparation.

*EW-tableaux, Le-tableaux, tree-like tableaux and the Abelian sandpile model*

With Jason Smith and Einar Steingrímsson.

Submitted. Preprint: [ArXiv:1711.01622](https://arxiv.org/abs/1711.01622).

*Decomposing recurrent states of the Abelian sandpile model* (Journal article)

With Mark Dukes.

SLC, Volume 77, January 2018, B77g.

*Decomposing recurrent states of the Abelian sandpile model* (Extended abstract)

With Mark Dukes.

ENDM, Volume 54, October 2016, Pages 97-102.

*Representations of stack triangulations in the plane*

Submitted. Preprint: [ArXiv:1309.2566](https://arxiv.org/abs/1309.2566).

*A natural stochastic extension of the sandpile model on a graph*

With Yaoban Chan and Jean-François Marckert.

Published in JCTA, Volume 120, Issue 7, September 2013, Pages 1913–1928.

## **Other scientific papers:**

*Convergence de cartes et tas de sable*

PhD Thesis. Under the supervision of Jean-François Marckert.

*Un modèle de carte aléatoire : le collage d'arbres binaires*

Magistère Thesis for the ENS: an introduction to my research domain.

*Gluing leaves of large random binary trees*

Masters Thesis. Under the supervision of Jean-François Marckert.

*L'intégration dans les groupes topologiques localement compacts et ses applications*

First year of Masters, short Thesis. Co-written with Xiao Lu, under the supervision of Thierry Lévy.

## **Talks:**

*A stochastic sandpile model*

February 2018, Combinatorics Seminar, University of Strathclyde, Glasgow, UK.

*Permutations, EW-tableaux, and recurrent configurations of the Abelian sandpile model on Ferrers graphs*

December 2017, Seminar of the Mathematics Department, University of Melbourne, Australia.

*Permutations and recurrent configurations of the Abelian sandpile model on Ferrers graphs*

December 2017, 5<sup>th</sup> International Combinatorics Conference, Monash University, Melbourne, Australia.

*EW-tableaux, tree-tableaux, and related combinatorial objects*  
 October 2017, Seminar of the Mathematics Department, AUB, Beirut, Lebanon.

*A bijection between EW-tableaux and Le-tableaux*  
 March 2017, SLC 78 Conference, Ottrott, France.

*Une bijection entre tableaux de permutations et tableaux EW*  
 March 2017, “Journées ALEA” Conference, CIRM, Luminy, France.

*Probablity limit theorems and their use in combinatorics*  
 February 2017, Combinatorics Seminar, University of Strathclyde, Glasgow, UK.

*Decomposing recurrent states of the Abelian sandpile model*  
 September 2016, SLC 77 Conference, Strobl, Austria.

*Decomposing recurrent states of the Abelian sandpile model*  
 July 2016, Discrete Mathematics Days – JMDA 2016 Conference, Barcelona, Spain.

*Decomposing recurrent states of the Abelian sandpile model*  
 November 2015, Computer and Information Sciences Seminar, University of Strathclyde, Glasgow, UK.

*Representations of stack triangulations in the plane*  
 January 2015, Graz Discrete Mathematics and Optimization Seminar, TU Graz, Austria.

*Convergence de cartes et le modèle du tas de sable*  
 December 2014, PhD Thesis defence, LaBRI, Bordeaux, France.

*Dessins de triangulations en pile*  
 March 2014, “Journées ALEA” Conference, CIRM, Luminy, France.

*Une extension stochastique du modèle du tas de sable sur un graphe*  
 February 2014, “Journées Combinatoires de Bordeaux” Conference, LaBRI, Bordeaux, France.

*Dessins de triangulations en pile*  
 October 2013, Workgroup “Probabilité et Informatique”, LaBRI, Bordeaux, France.

*Une extension stochastique du modèle du tas de sable sur un graphe*  
 March 2013, “Journées ALEA” Conference, CIRM, Luminy, France.

*Une extension stochastique du modèle du tas de sable sur un graphe*  
 October 2012, Workgroup “Combinatoire Enumérative et Algébrique”, LaBRI, Bordeaux, France.

*Un modèle de carte aléatoire : le collage d'arbres binaires uniformes*  
 October 2010: Magistère Thesis defence, ENS, Paris, France.

*Gluing leaves of large random binary trees*  
 September 2010: Masters Thesis defence, LaBRI, Bordeaux, France.

*Convergence des arbres de Galton-Watson généraux vers l'arbre continu uniforme*  
 June 2010: as part of the Masters course “Arbres Aléatoires”, University Paris 6, France.

*Intégrales matricielles et énumération de cartes*  
 April 2010: as part of the Masters course “Matrices aléatoires”, University Paris 11, France.

*Marches Aléatoires dans le plan*  
 October 2008: Workgroup “Probabilités”, ENS, Paris, France.

*L'intégration dans les groupes topologiques localement compacts et ses applications*  
 June 2008: first year of Masters short Thesis defense, ENS, Paris, France.

## **Teaching:**

2016-2017:

Algorithms and Complexity, second year of Bachelor's degree in Computer Science at the University of Strathclyde. Introduction to complexity, complexity of non recursive and recursive algorithms, searching and sorting algorithms, algorithms on binary trees, binary search trees.

2015:

Mathématiques – Probabilités, MNESS (“Mise à Niveau pour les Etudes Scientifiques Supérieures”) at the Bordeaux University. An A-Level course in Probability Theory: basic notions, trees, conditional probability, random variables (discrete and continuous), De Moivre-Laplace theorem, sampling.

C2 (Certificat Informatique et Internet), various students at the Bordeaux University. Basic notions of Linux operating system, Open Office pack.

Statistiques Inférentielles, second year of Bachelor's degree in Economics at the Bordeaux University. Basic notions of statistics: sampling, confidence intervals, and some statistical tests (e.g. Fischer's).

Supervision: Co-supervised a student's final year Undergraduate project in molecular biology. Helped select and carry out some statistical tests that were needed for the project. The student obtained a mark of 16/20.

2013-2014:

Statistiques pour l'Informatique, third year of Bachelor's degree in Computer Science at the University Bordeaux I. Basic notions of Probability Theory, Law of Large Numbers, Central Limit Theorem.

Base de Données, third year of Bachelor's degree in Computer Science at the University Bordeaux I. Relational Algebra, Relational Calculus, Normalisation.

2012-2013:

Statistiques pour l'Informatique, third year of Bachelor's degree in Computer Science at the University Bordeaux I. Basic notions of Probability Theory, Law of Large Numbers, Central Limit Theorem.

Informatique Théorique 2, third year of Bachelor degree in Computer Science at the University Bordeaux I. Automata, grammars.

2011-2012:

Algorithmique et Structure de Données 1, second year of Bachelor's degree in Computer Science. Complexity, Recursive algorithms, Stacks and Queues, Trees, Dictionnaires.

C2 (Certificat Informatique et Internet), various students at the University Bordeaux I. Basic notions of Linux operating system, Open Office pack.

2007-2010; 2014-2015:

Private Tutoring: taught Mathematics and Physics to nine students at various levels, ranging from high school (final two years, Section S) to Preparatory Classes in Mathematics (first and second years).

## **Computer skills:**

Operating systems: *Windows, Linux*.

Programming: *Python, Sage, Maple; notions of SQL, Matlab*.

*LATEX, Open Office*.

## **Languages:**

Completely bilingual (French and English).

German: intermediate.

Notions of Mandarin, Spanish.

## **Extracurricular activities:**

*Singing:*

1996-2001: Sang in the Maîtrise de Radio France, as part of a “mi-temps” school course (normal school studies in the morning, musical activities in the afternoon).

2001-2010: Sang in the Notre Dame de Paris Youth Choir.

2010-2015: Sang in the Groupe Vocal Arpège, Bordeaux.

September 2012 - January 2014: Treasurer and Board Member of the Groupe Vocal Arpège.

2015-present: Singing in the Paisley Abbey Choir, UK.

*Musical Instruments:*

Studied classical guitar for 12 years at the Conservatoire des Lilas, Paris.

Studied piano for 2 years at the Maîtrise de Radio France, self-taught afterwards.

*Cricket:*

2003-2010: Played for PUC (Paris University Club) cricket team in Paris.

2003-2007: Represented the French national age grade teams at U15 (2003), U17 (2004) and U19 (2005 and 2007) levels.

2006-2009: Vice-captain of PUC III cricket team.

2009-2010: Captain of PUC III cricket team.

2010-2015: Member of BGCC (Bordeaux Giscours Cricket Club) in Bordeaux.

2012-2015: Club Secretary and Board Member of BGCC.

*Others:*

2001-2005: Played tennis at the Tennis Club des Lilas in Paris. Awarded “balle rouge” level.

2001-2005: Played Scrabble at the Scrabble Club des Lilas in Paris. Won the Junior “Non Classé” National Championships in 2003.