

Viviane Pons

Personal Data

Date of birth: February 5, 1985
Nationality: French
Language: French (native), English

Current Position

I am a PhD student in the algebraic combinatorics team at LIGM (Laboratoire d'Informatique Gaspard Monge) in Marne-la-Vallée University. My advisers are Jean-Christophe Novelli and Jean-Yves Thibon.

Research Interests

My main interests are in algebraic combinatorics: combinatorial algebras, combinatorial algorithms, multivariate polynomials, combinatorial Hopf algebras and symmetric functions. I also have a deep interest in mathematical programming through the development of the software Sage.

Education

- 2010–2013 **PhD (in progress)**, *Marne-la-Vallée University*, Topic: algebraic combinatorics. Advisors: Jean-Christophe Novelli and Jean-Yves Thibon.
Intended defence date: September 2013.
- 2008–2010 **Master's degree**, *Marne-la-Vallée University*, with honours.
Topic: computer science, major: combinatorics.
- 2003–2006 **Bachelor's degree**, *Marne-la-Vallée University*, with honours.
Topic: computer science and mathematics.
- 2003 **Baccalauréat**, *Lycée Gérard de Nerval*, Noisiel, with honours.
Major: science and mathematics.

Research Publications

- 2012 **Counting smaller trees in the Tamari order**, (*with Chatel G.*).
Submitted to the international conference of Formal Power Series and Algebraic Combinatorics, arXiv:1212.0751
- 2012 **Interval structure of the Pieri formula for Grothendieck polynomials**, 27 pages.
To appear in International Journal of Algebra and Computation arXiv:1206.6204
- 2011 **Multivariate Polynomials in Sage**, 18 pages.
Séminaire Lotharingien de Combinatoire 66, article B66z, arXiv:1207.0398

Presentations

- February, 2013 **Sage Days 45**, *ICERM*, Providence, RI.
Tutorial: introduction to Python and Sage and short Schubert polynomial demo
- October, 2012 **LIAFA combinatorics workshop**, *Université Paris 7*.
Treillis d'Ehresmann et matrices à signes alternants
- May, 2012 **Sage Days 38**, *CRM*, Montreal.
Bases of multivariate polynomials

- March, 2012 **Séminaire Lotharingien de Combinatoire 68**, *Domaine Saint-Jacques, Ottrot*.
A Pieri formula for double Grothendieck polynomials
- February, 2012 **LIPN combinatorics seminar**, *Université Paris 13*.
Les bases de l'anneau des polynômes en Sage
- January, 2012 **LIAFA combinatorics seminar**, *Université Paris 7*.
Opérateurs de réordonnement et polynômes de Grothendieck
- October, 2011 **LACIM combinatorics seminar**, *UQAM*.
Mixed product of two kinds of 0-Hecke algebra generators
- October, 2011 **York university combinatorics seminar**, *York University*.
Mixed product of two kinds of 0-Hecke algebra generators
- June, 2011 **Rencontre du GT CombAlg**, *Université de Rouen*.
Opérateurs de réordonnement et intervalles pour l'ordre de Bruhat
- June, 2011 **Doctoral School Day**, *Marne-la-Vallée University*.
Sage : un logiciel de calcul formel pour les doctorants
- June, 2011 **FPSAC**, Reykjavik, Islande.
Software presentation: Multivariate polynomials in Sage
- March, 2011 **Séminaire Lotharingien de Combinatoire 66**, Ellwangen.
Software presentation: Multivariate polynomials in Sage

Other attended conferences and workshops

- 2013 **AIM workshop: online databases: from L-functions to combinatorics**, *ICMS, Edinburgh, UK*.
- 2012 **FPSAC**, Nagoya, Japan.
- 2012 **Rencontre du GT CombAlg**, *Université du littoral côte d'Opale, Calais*.
- 2012 **Workshop: Sage-Combinat Days**, *Université Paris Sud 11, Cernay*.
- 2012 **Journées Combinatoires de Bordeaux**, *Université Bordeaux 1*.
- 2012 **Sage Days 28**, *Université Paris Sud 11, Orsay*.
- 2010 **Joint Sage-Combinat and Chevie Workshop**, *Université Paris Sud 11, Cernay*.
- 2010 **Sage days 20**, *CIRM, Marseille*.

Software development

- Multivariate polynomials Development of a tool within the Sage software to compute and work with multivariate polynomials in multi bases (Schubert, Grothendieck, Demazure) as well as divided differences operators.
- Trees on Sage Participation to adding Trees objects into the Sage software to allow for algebraic work on trees.
- Findstat Participation to the development of the Findstat website, <http://www.findstat.org/>, whose goal is to reference statistics on combinatorial objects in interaction with the software Sage.

Service

- 2011 **Student representative for the doctoral school.**
I was elected by my fellow PhD students to be their representative at the doctoral school. I was attending the doctoral school councils and taking part in decisions concerning the thesis organisation and rules.
- 2011 **Organising the Doctoral School Day.**
Scientific event organised each year by the doctoral school and the student representatives, where students from different fields give presentations to other students. My role was to contact students and invited speakers to conceive a program where all fields of the doctoral school were represented.
- 2010–2011 **Student representative for the university.**
I was elected by my fellow university students to be their representative at the university instances. I was attending university councils and taking part in general university decisions (teachings, rules, fundings, ...).
- 2010 **Mathematical game day.**
The mathematical game day is organised each year in Paris for children and middle school pupils to discover mathematics in an attractive manner. With other students and researchers, I was in charge of stand and developed a small game: <http://www.ludeales.com/jeuxMath/pomme.html>.

Teaching

All courses listed are at the University of Marne-la-Vallée or associated engineering schools. The TA position always involves giving classes to groups of students (between 12 and 30) which are mandatory and a complement to the main class. As TA, we have to prepare exercise sheets in collaboration with the full professor in charge of the class and the other TA. We are also involved in the examination process: preparing, monitoring and correctings exams and student projects.

- 2011–2012 **Computer architecture**, *Teaching assistant*, to 3rd year students.
- 2011–2012 **Java and object oriented programming**, *Teaching assistant*, to 3rd year students.
- 2010–2012 **C programming**, *Teaching assistant*, to 2nd year students.
- 2010–2011 **PHP and MySQL**, *Teaching assistant*, to 3rd year students.
- 2010–2011 **Automata**, *Teaching assistant*, to 3rd year students.
- 2005 **Calculus**, *Tutorial instructor*, Pre classes for first year students.

Other work experience

- 2008–2010, France **Freelance Web Developer.**
Specialised in WordPress, building themes and websites for small companies.
- 2006–2008, Ireland **Java Web Developer**, *In1 Solutions*, Swords, Ireland.
Backend and frontend development in Java, HTML, JavaScript for hotel websites and booking engine softwares.

Programming Skills

- Programming languages C, Java, Python, PHP
- Web programming HTML, CSS, JavaScript, PHP and MySQL, WordPress