

Nicolas M. THIÉRY



Born the 28th of May 1973, at Paris XV^e (Age : 36)

French nationality

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Note : not everything below is translated in English ; sorry for the language mixture

Positions and studies

2004-2010 : **Associate professor with tenure** in mathematics,

Institut Universitaire de Technologie d'Orsay, département d'informatique ;

Laboratoire de Mathématiques d'Orsay, Université Paris Sud ;

2008 : **Habilitation à diriger des recherches**, defended on December 10-th in Orsay ;

Algèbre combinatoire et effective : des graphes aux algèbres de Kac via l'exploration informatique

Reviewers : François Bergeron, Peter Cameron, Bernard Leclerc ;

Jury : Jean-Benoît Bost, Mireille Bousquet-Mélou, Alain Lascoux (président),

Jean-Yves Thibon, Léonid Vainerman, Paul Zimmermann ;

09/2008-02/2009 : **Researcher** (funded by CNRS)

Institut Gaspard Monge, Marne-la-vallée ;

2007-2008 and 02/2009-08/2009 : **Researcher** at the Department of Mathematics of the University of California at Davis (funded by the NSF) ;

02/2004-06/2004 : **Senior architect and developer** at the Software Security Department of IDEALX ;

01/2001-08/2004 : **Associate professor with tenure**, Univ. Claude Bernard Lyon I ;

1999-12/2000 : Colorado School of Mines (USA) ; Adjunct faculty, Colorado School of Mines.

1999 : **PhD thesis of mathematics and computer science**, defended June 15th :

Algebraic Invariants of Graphs and Reconstruction ; a computer aided study ;

Advisor : Maurice Pouzet ; Reviewers : Adriano Garsia, William Kocay

Jury : Adrian Bondy, Marc Giusti, Michel Habib, Daniel Kroh ;

1997 : Agrégation de Mathématiques, with rank 135

(French yearly national competition for hiring teachers for high schools and universities).

1996-1999 : Lecturer at the UCBL (France).

1992-1996 : Student at the École Normale Supérieure, Paris (France).

Publications

International journals

- [1] Jason Bandlow, Anne Schilling, and Nicolas M. Thiéry. On the uniqueness of promotion operators on tensor products of type a crystals. *Journal of Algebraic Combinatorics*, 31, Mai 2010. arXiv :0806.3131 [math.CO].
- [2] Florent Hivert, Anne Schilling, and Nicolas M. Thiéry. Hecke group algebras as quotients of affine Hecke algebras at level 0. *J. Combin. Theory Ser. A*, 116(4) :844–863, 2009. arXiv :0804.3781v3 [math.RT].
- [3] Florent Hivert and Nicolas M. Thiéry. The Hecke group algebra of a Coxeter group and its representation theory. *J. Algebra*, 321(8) :2230–2258, 2009. arXiv :0711.1561 [math.RT].
- [4] Pierrick Gaudry, Éric Schost, and Nicolas M. Thiéry. Evaluation properties of symmetric polynomials. *Internat. J. Algebra Comput.*, 16(3) :505–523, 2006. <http://hal.inria.fr/inria-00000629>.
- [5] Florent Hivert and Nicolas M. Thiéry. MuPAD-Combinat, an open-source package for research in algebraic combinatorics. *Sém. Lothar. Combin.*, 51 :Art. B51z, 70 pp. (electronic), 2004. <http://igd.univ-lyon1.fr/~slc/wpapers/s51thiery.html>. <http://mupad-combinat.sf.net/>.
- [6] Jean-Christophe Novelli, Jean-Yves Thibon, and Nicolas M. Thiéry. Algèbres de Hopf de graphes. *C. R. Math. Acad. Sci. Paris*, 339(9) :607–610, 2004. doi :10.1016/j.crma.2004.09.012, arXiv :0812.3407v1 [math.CO].
- [7] Nicolas M. Thiéry and Stéphan Thomassé. Convex cones and SAGBI bases of permutation invariants. In *Invariant theory in all characteristics*, volume 35 of *CRM Proc. Lecture Notes*, pages 259–263. Amer. Math. Soc., Providence, RI, 2004. arXiv :math/0607380 [math.AC].
- [8] Florent Hivert and Nicolas M. Thiéry. Deformation of symmetric functions and the rational Steenrod algebra. In *Invariant theory in all characteristics*, volume 35 of *CRM Proc. Lecture Notes*, pages 91–125. Amer. Math. Soc., Providence, RI, 2004. arXiv :0812.3056v1 [math.CO].
- [9] Maurice Pouzet and Nicolas M. Thiéry. Invariants algébriques de graphes et reconstruction. *C. R. Acad. Sci. Paris Sér. I Math.*, 333(9) :821–826, 2001. arXiv :0812.3079v1 [math.CO].
- [10] Nicolas M. Thiéry. Algebraic invariants of graphs : a study based on computer exploration. *SIGSAM Bulletin (ACM Special Interest Group on Symbolic and Algebraic Manipulation)*, 34(3) :9–20, September 2000. arXiv :0812.3082v1 [math.CO].

International conference with refereed proceedings

- [1] Florent Hivert, Anne Schilling, and Nicolas M. Thiéry. The biHecke monoid of a finite Coxeter group. In *22nd Annual International Conference on Formal Power Series and Algebraic Combinatorics (FPSAC 2010)*, March 2010. arXiv :0912.2212v1 [math.CO], accepted.
- [2] Florent Hivert, Anne Schilling, and Nicolas M. Thiéry. Hecke group algebras as degenerate affine Hecke algebras. In *20th Annual International Conference on Formal Power Series and Algebraic Combinatorics (FPSAC 2008)*, pages 611–624, September 2008. <http://www.dmtcs.org/dmtcs-ojs/index.php/proceedings/article/view/dmAJ0153>.

- [3] Florent Hivert and Nicolas M. Thiéry. Representation theories of some towers of algebras related to the symmetric groups and their Hecke algebras. In *Proceedings of FPSAC'06 San Diego*, 2006. arXiv :math/0607391v2 [math.RT].
- [4] Maurice Pouzet and Nicolas M. Thiéry. Some relational structures with polynomial growth and their associated algebras. In *Proceedings of FPSAC'05 Taormina*, 2005. arXiv :math/0601256 [math.CO].
- [5] Nicolas M. Thiéry. Computing minimal generating sets of invariant rings of permutation groups with SAGBI-Gröbner basis. In *Discrete models : combinatorics, computation, and geometry (Paris, 2001)*, Discrete Math. Theor. Comput. Sci. Proc., AA, pages 315–328 (electronic). Maison Inform. Math. Discrèt., Paris, 2001. <http://www.dmtcs.org/pdfpapers/dmAA0123.pdf>.

Submitted

- [1] Marie-Claude David and Nicolas M. Thiéry. Exploration of finite dimensional kac algebras and lattices of irreducible intermediate subfactors. Submitted, 83 pages, arXiv :0812.3044 [math.QA], December 2008.

PhD and Habilitation thesis, communications

- [1] Nicolas M. Thiéry. Algèbre Combinatoire et Effective; des graphes aux algèbres de Kac *via* l'exploration informatique. Mémoire d'Habilitation à Diriger des Recherches, December 2008. Laboratoire de Mathématiques d'Orsay, Université Paris Sud, arXiv :0912.2619v1 [math.CO].
- [2] Conrado Martínez, Xavier Molinero, and Nicolas M. Thiéry. Generació ordenada de classes d'estructures combinatòries (ordered generation of combinatorial structures). In *In Jornada de Recerca EPSEM 2006*, pages 83–84. EPSEM (Technical College of Manresa <<http://www.eupm.upc.es/>>), Remsa S.L. Manresa, April 2006. <http://www.epsem.upc.edu/recerca/jornada-de-recerca-epsem-20-d-abril-de-2006/DossierJornadadeRecerca.pdf>. ISBN : 84-86784-05-0. ISBN : 978-84-86784-05-8.
- [3] Nicolas M. Thiéry. PerMuVAR, a library for computing in invariant rings of permutation groups. Software demonstration, MEGA 2000, Bath, UK, 2000. <http://permuvar.sourceforge.net/>.
- [4] Nicolas M. Thiéry. Algebraic invariants of graphs; an experimental study. Poster, ISSAC'99, Vancouver, CANADA, 1999. **Awarded best poster prize.**
- [5] Nicolas M. Thiéry. *Invariants algébriques de graphes et reconstruction; une étude expérimentale*. PhD thesis, Université Lyon I, June 1999. <http://nicolas.thiery.name/Preprints/Thiery.IAGR/Thiery.IAGR.pdf>. 300 pages, N° d'ordre : 167-99.

Research supervision

- PhD advisor of Nicolas Borie (Fall 2008-);
PhD coadvisor of Tom Denton (joint with Anne Schilling, Fall 2008-)
- Reviewer of one PhD thesis (Rahmany, 2009); member of four PhD committees (Rahmany, Buchwalder, 2009, Descouens, 2007, Molinero 2005);
- Coordination of `*-Combinat` software development (see below), including the training of multiple PhD students : Borie, Boussicault, Denton, Descouens, Molinero, Pon, Wang, etc.

Invited speaker

1. Schubert Calculus Summer School, Toronto, Canada, July 2010 (lecturer);
2. *Sage days 20.5*, Fields Institute, Toronto, Canada, May 2010;
3. *Sage days 20*, CIRM, Luminy, France, February 2010 (mini-course);
4. *Journée PLUME - Groupe Calcul : 'Les alternatives libres aux outils propriétaires de mathématiques'*, Paris, France, February 2010 (opening lecture);
5. *Sage days 15*, Seattle, USA, May 2009;
6. *Sage days 10*, Nancy, France, October 2008, (chair of session on combinatorics);
7. *AMS special session on Algebraic Combinatorics*, Claremont, USA, May 2008;
8. *Sage days 7*, Los Angeles, USA, February 2008;
9. *AMS Joint Mathematics Meeting, Special Session on Applications of Computer Algebra in Enumerative and Algebraic Combinatorics*, San Diego, USA, January 2008;
10. *Axiom Workshop 2007*, RISC, Linz, Austria, June 2007;
11. *Axiom Workshop 2006*, RISC, Linz, Austria, April 2006;
12. *Modular Invariants and Representations of Finite Groups : Theory and Computation*, Canterbury, UK, September 2003;
13. *Journées du LIPN, Combinatoire, Informatique et Physique*, Villetaneuse, 2003;
14. *Workshop on Invariant Theory*, Kingston, Canada, 2002.

Recent seminars

Orléans (juin 2007); UC Davis (octobre 2007, juin 2009); MSRI, Berkeley (avril 2008); Orsay (décembre 2008); LMNO, Caen (janvier 2009), Tulane, New-Orleans (mars 2009); INRIA, Rocquencourt; LIPN, Villetaneuse (novembre 2009); LIAFA, Paris (février 2010); LACL, Créteil (juin 2010).

Mobility

2009 : Five months at the University of California at Davis;
2007-2008 : One year at the University of California at Davis;
2006 : One month at UCSD (San Diego, USA), with A. Garsia;
1999-2000 : 16 months at the department of mathematics and computer sciences of the Colorado School of Mines (Golden, Colorado).

Free software development

MuPAD-Combinat (<http://mupad-combinat.sf.net/>) and Sage-Combinat (<http://combinat.sagemath.org/>) :

I coordinate this open source software (LGPL/GPL) since I launched it with Florent Hivert in 2000. Its mission is to improve the open source mathematical system Sage (previously MuPAD) as an extensible toolbox for computer exploration in algebraic and enumerative combinatorics, and foster code sharing between researchers in this area.

Its use played an essential role in 60+ publications, with 30+ contributors.

Funding : ANR/NSF/Google. Industry collaborator -2008 : Sciface GMBH.

Personal contribution to Sage since 2008 : author of 55 tickets and 55 000 lines de code/doc/tests; referee of 27 tickets.

Synergistic activities

- Member of the hiring committee for Poste MCF IUT Orsay 1740 (27ème), 2010.
- Member of the NSF «Focused Research Group : Affine Schubert Calculus»
<http://garsia.math.yorku.ca/dokuwiki/doku.php>, 500 k\$, 2007-2010
PI : Jennifer Morse, Drexel University, Anne Schilling, UC Davis, Mark Shimozono, Virginia Tech. Members : Jason Bandlow, Penn/UC Davis, Francois Descouens, Fields Institute, Thomas Lam, Harvard, Luc Lapointe, Universidad Talca, Huilan Li, Drexel University, Mike Zabrocki, York University.
Besides my participation to the research, I play the role of consultant on the algorithmic and computational aspects, and am in charge of the coordination of the software development. In particular, I wrote the related section in the project application file (4 pages out of 23) ;
- Coorganizer of six *-Combinat meetings : June 2004 (Rouen), June (Orsay) and September 2007 (Banff), January (Orsay) and July 2009 (RISC), June 2010 (Orsay) ;
- Coorganiser of *Sage Days 20*, March 2010 (CIRM, 110 participants) ;
- Local organizer of the *Workshop on Open Source Computer Algebra* (Lyon, 21-23 mai 2002, 50 participants) ;
- Webmaster and system administrator of the Laboratoire de Mathématiques Discrètes and the Laboratoire de Probabilités (UCBL) 1997-2004 (UNIX : GNU/Linux/HP-UX, TX).
- System administrator of the department of maths and computer science of the CSM, 1999-2000 (UNIX : GNU/Linux).
- Webmaster and system administrator (softwares and games for students) at the ENS (UNIX : SunOS/Solaris).

Teaching experience (\approx 1900 hours since 1996)

Researcher at the Dept. of Maths, University of California at Davis (2007-2009) :

Informal graduate courses in combinatorics (20h) ;

Assistant Professor at the IUT d'Orsay (Fall 2004-2007, 2009-) :

L1 : *Maths générales, Calcul formel pour les Mathématiques* (Cours et TP), *Projet Professionnel Personnalisé, Projets Tuteurés*,

L2 : Algo et Langage C++ (TD et TP), Java (Cours, TD et TP), *Maths générales* (TD), *Recherche Opérationnelle* (Cours et TD),

M1 : **montage et responsabilité** de l'option *Algèbre et Calcul Formel* de la préparation à l'agrégation d'Orsay (2 x 50h) ;

Assistant Professor at the Univ. Claude Bernard Lyon I (2001-) :

L1 Filière Ingénieur 2000, Université de Marne-la-Vallée : C++ (TP, 20h),

L3 Maths : *Optimisation discrète* (TD, 2x27h),

M1 Maths et Ingénierie Mathématique : *Operational research*, M1 Maths et Ingénierie Mathématique (Course and recitations, 3x80h)

M2 Statistiques, Informatique et Techniques Numériques : **montage et responsabilité** de la thématique informatique, *Remise à niveau informatique, Utilisation de l'outil informatique, Systèmes et réseaux informatiques* (Cours, TD et TP, 3x90h) ;

Adjunct faculty at the Colorado School of Mines (1999-2000) :

Instructor of two 3-credit hours courses : MACS 261c : "Programing concepts, in C++" and MACS 368 : "Algebraic structures and discrete math".

Graduate student at Univ. Claude Bernard Lyon I (1996-1999) :

TA of Computer Science (Turbo-Pascal), first year of DEUG (32h, fall 1996),

TA of Mathematics, first year of DEUG (Calculus II) (60h, fall 1996),

TA of algebra and combinatorics, first year of DEUG (Calculus II) (40h, spring 1998),

TA of discrete maths, second year of DEUG (Calculus III) (32h + 20h, spring 1998 and 1999),

Introduction to Maple, first year of the ENS Lyon (16h, October 1996),

Languages

French : mother tongue, *english* : fluent, *german* : read and written.