

# Curriculum vitæ

## Pierre-Louis Giscard

Born 15/12/1985, married, two children

### Assistant Professor in Algebraic Combinatorics

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## Curriculum

- Present** Permanent position at the Université du Littoral Côte d'Opale
- 2015–2018** **1851 Research Fellow**, University of York
- 2014–2015** **EPSRC Postdoctoral Fellow**, University of Oxford
- 2009–2014** PhD, *A graph theoretic approach to matrix functions and quantum dynamics*, University of Oxford
- 2007–2009** MSc. & Graduate Research Assistant, *Nanomechanical systems in the quantum regime*, University of Arizona
- 2005–2009** Diplôme d'ingénieur (eq. MSc.), Institut d'Optique Graduate School

## Awards & Grants

- 2022-2025** MathAmSud project ALGonCOMB (Algebraic structures supported on families of combinatorial objects)
- 2020-2024** Prime d'Encadrement Doctoral et de Recherche (PEDR)
- 2021-2025** **French National Research Agency Research Grant**  
Project MAGICA ANR-20-CE29-0007: MAGnetic resonance techniques and Innovative Combinatorial Algebra
- 2019-2023** **French National Research Agency Young Researcher Award (ANR JCJC)**  
Project ALCOHOL ANR-19-CE40-0006: ALgebraic COmbinatorics of Hikes On Lattices
- 2019** CNRS PEPS award
- 2015–2018** **Research Fellowship** of the **Royal Commission for the Exhibition of 1851**
- 2014-2015** British Research Council postdoctoral fellowship, **on success of grant** EP/K038311/1.
- 2014** **Thesis prize**, Oxford Thesis Commendation for best thesis of the Mathematical, Physical and Life Sciences Division.
- 2009-2014** Scatcherd European scholarship

## Track record

- ▷ **Publications:** 25 articles, 5 conference proceedings, 4 preprints & 9 algorithms  
Google Scholar data (10/2022): **552** citations; h-index **11**.
- ▷ **Presentations:** 17 invited seminars; 3 invited conference talks; 16 seminars and contributed conference talks; 6 posters.

## Scientific reviewing

AMS Mathematical Reviews; Discussiones Mathematicae Graph Theory; Foundations of Computational Mathematics; SIAM Journal on Matrix Analysis and Applications; Journal of Mathematical Physics; Computer Physics

Communications; IMA Journal of Applied Mathematics; Journal of Computer and System Sciences; Entropy; Annals of Physics; Journal of Machine Learning Research; Journal of Complex Networks; Special Matrices; Journal of Mathematical Imaging and Vision; Journal of Statistical Physics; International Conference Physics Mathematics Statistics

## Administrative activities

Elected member of the University Littoral Côte d'Opale Central Administration comity.

Elected member of the University Littoral Côte d'Opale 'commission des status'.

Elected member of the University Littoral Côte d'Opale 'commission primes'.

Elected member of the board of the Laboratoire de Mathématiques Pures et Appliquées.

Organisation of the Alcohol workshop on the combinatorics of walks on graphs, May 2021.

Organisation of annual workshop of the Renormalisation Research Group (GdR), fall 2019.

## Supervision

Supervision of one PhD student (80%), 2021-2024.

Supervision of one postdoc (50%), 2020-2021.

Supervision of one PhD student (50%) and one research intern (100%), 2013-2015. Supervision of two M1 student (100%), 2019-2020.

Supervision of one PhD student (50%) and one research intern (100%), 2013-2015.

## Popular science articles

[1] Que sait-on compter sur un graphe ? Partie 3: Matrices et chemins.

P.-L. Giscard, *Image des Maths*, link, December 2020

[2] Que sait-on compter sur un graphe ? Partie 2: Motifs et polygones.

P.-L. Giscard, *Image des Maths*, October 2020

[3] Que sait-on compter sur un graphe ? Partie 1: Des graphes du monde qui nous entoure.

P.-L. Giscard, *Image des Maths*, July 2020

## List of publications

## References

- [1] P. -L. Giscard and M. Foroozandeh. "Exact solutions for the time-evolution of quantum spin systems under arbitrary waveforms using algebraic graph theory". In: *Computer Physics Communications* (2022), p. 108561. ISSN: 0010-4655. DOI: <https://doi.org/10.1016/j.cpc.2022.108561>. URL: <https://www.sciencedirect.com/science/article/pii/S0010465522002806>.
- [2] T. Birkandan, P.-L. Giscard, and A. Tamar. "Computations of general Heun functions from their integral series representations". In: *2021 Days on Diffraction (DD)*. 2021, pp. 12–18. DOI: 10.1109/DD52349.2021.9598600.
- [3] Jean Fromentin, P. -L Giscard, and T Karaboghossian. "Why walks lead us astray in the study of graphs". In: (2021). arXiv: 2110.15618 [math.CO].
- [4] Pierre-Louis Giscard. "Counting walks by their last erased self-avoiding polygons using sieves". In: *Discrete Mathematics* 344.4 (2021), p. 112305. ISSN: 0012-365X. DOI: <https://doi.org/10.1016/j.disc.2021.112305>. URL: <http://www.sciencedirect.com/science/article/pii/S0012365X21000182>.
- [5] Pierre-Louis Giscard and Stefano Pozza. "Tridiagonalization of systems of coupled linear differential equations with variable coefficients by a Lanczos-like method". In: *Linear Algebra and its Applications* 624 (2021), pp. 153–173. ISSN: 0024-3795. DOI: <https://doi.org/10.1016/j.laa.2021.04.011>. URL: <https://www.sciencedirect.com/science/article/pii/S0024379521001683>.
- [6] P. -L. Giscard and A. Tamar. "Elementary Integral Series for Heun Functions. With an Application to Black-Hole Perturbation Theory". In: *arXiv:2010.03919* (2020).
- [7] P.-L. Giscard and C. Bonhomme. "Undamped and Damped Bloch Equations: Exact Solutions by Path-Sum". In: *61st Experimental Nuclear Magnetic Resonance Conference, Baltimore, Maryland*. 2020.

- [8] Pierre-Louis Giscard. “On the solutions of linear Volterra equations of the second kind with sum kernels”. In: *Journal of Integral Equations and Applications* 32 (4 2020), pp. 429–445.
- [9] Pierre-Louis Giscard and Christian Bonhomme. “Dynamics of quantum systems driven by time-varying Hamiltonians: Solution for the Bloch-Siegert Hamiltonian and applications to NMR”. In: *Phys. Rev. Research* 2 (2 04/2020), p. 023081. DOI: 10.1103/PhysRevResearch.2.023081. URL: <https://link.aps.org/doi/10.1103/PhysRevResearch.2.023081>.
- [10] Pierre-Louis Giscard and Stefano Pozza. “Lanczos-like algorithm for the time-ordered exponential: The  $*$ -inverse problem”. In: *Applied Mathematics* (2020), pp. 1–21. DOI: 10.21136/AM.2020.0342-19.
- [11] C. Bonhomme and P.-L. Giscard. “Theory of Solid state NMR: from Dyson, Magnus, Feynman to Path-Sum”. In: *Alpine Conference on Magnetic Resonance in Solids*. 2019.
- [12] P.-L. Giscard and C. Bonhomme. “A new approach of time-ordered exponential in NMR: the path-sum”. In: *60th Experimental Nuclear Magnetic Resonance Conference*. 2019.
- [13] P.-L. Giscard, N. Kriege, and R. C. Wilson. “A general purpose algorithm for counting simple cycles and simple paths of any length”. In: *Algorithmica* 81 (7 2019), pp. 2716–2737. DOI: 10.1007/s00453-019-00552-1. URL: <https://doi.org/10.1007/s00453-019-00552-1>.
- [14] Pierre-Louis Giscard and Stefano Pozza. “Lanczos-like method for the time-ordered exponential”. In: *arXiv e-prints*, arXiv:1909.03437 (09/2019), arXiv:1909.03437. arXiv: 1909.03437 [math.NA].
- [15] N. Kriege et al. “Computing Optimal Assignments in Linear Time for Graph Matching”. In: *19th IEEE International Conference on Data Mining* (01/2019).
- [16] P.-L. Giscard and P. Rochet. “Enumerating Simple Paths from Connected Induced Subgraphs”. In: *Graphs and Combinatorics* (2018). ISSN: 1435-5914. DOI: 10.1007/s00373-018-1966-9. URL: <https://doi.org/10.1007/s00373-018-1966-9>.
- [17] P.-L. Giscard, P. Rochet, and R. C. Wilson. “A Hopf algebra for counting cycles”. In: *Discrete Mathematics* 341.5 (2018), pp. 1439–1448. ISSN: 0012-365X. DOI: <https://doi.org/10.1016/j.disc.2017.10.002>. URL: <http://www.sciencedirect.com/science/article/pii/S0012365X17303412>.
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- [20] P.-L. Giscard and P. Rochet. “Algebraic Combinatorics on Trace Monoids: Extending Number Theory to Walks on Graphs”. In: *SIAM Journal on Discrete Mathematics* 31.2 (2017), pp. 1428–1453. DOI: 10.1137/15M1054535. eprint: <https://doi.org/10.1137/15M1054535>. URL: <https://doi.org/10.1137/15M1054535>.
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