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Born January 8, 1981, Paris

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**Actual position:** Junior researcher CNRS at LIPN, Univ. Paris 13, France.

### Past positions and education

- Habilitation thesis, Univ. Paris 13 (Nov. 2016)
- Junior researcher CNRS at Poncelet lab., Moscow, Russie (2010–2011)
- Junior researcher CNRS at LIF, Marseille, France (2008–2010)
- Ph.D. in Computer Sciences, adviser V. Berthé, Univ. Montpellier (Dec. 2007)
- Student at École Normale Supérieure de Lyon (2001–2004)

### Grants

- Interdisciplinary (INP-INC-INS2I) CNRS project *self-assembly of supercrystals* (2019–2021)
- ANR QuasiCool (2013–2018)
- PEPS Stochasflip (2009–2010)

### Scientific event organization (selection)

- thematic month Transversal Aspects of Tilings, Oléron, France, June 2016
- Summer school Tilings and Tessellations, Isfahan, Iran, August 2015
- Thematic month Math-Info, Marseille, France, February 2010

### Students

- Carole Porrier, Ph. D. in Computer Sciences (2020–)
- Daria Pchelina, Ph. D. in Computer Sciences (2020–)
- Clémence Chinaud-Chaix, Ph. D. in Chemistry (2019–)
- Victor Lutfalla, Ph. D. in Computer Sciences (2018–2021)
- Ilya Galanov, Ph. D. in Computer Sciences (2016–2019)
- Alexandra Ugolnikova, Ph. D. in Computer Sciences (2013–2016)

### Teaching

- Univ. Paris 13 (undergraduate, ~ 30h/year)
- Various summer schools in Russia (Dubna, Sudislavl...)
- timely interventions for graduate students (ENS Lyon, École Jeunes Chercheurs, Moscow State University, Univ. Nazi Boni in Burkina Faso, Univ. Isfahan in Iran. . .)
- Popular science: “maths en jeans” (since 2010), savantes banlieues, . . .

## Selected publications

1. N. Bédaride, Th. Fernique, *Density of binary disc packings: the 9 compact packings*, Discrete and Computational Geometry, **67** (2022), pp. 787–810.
2. Th. Fernique, A. Hashemi, O. Sizova, *Compact packings of the plane with three sizes of discs*, Discrete and Computational Geometry **66** (2021), pp. 613–635.
3. Th. Fernique, *Compact packings of space with two spheres*, Discrete and Computational Geometry **65** (2021), pp. 1287–1295.
4. N. Bédaride, Th. Fernique, *Canonical projection tilings defined by patterns*, Geometriae Dedicata **208** (2020), pp. 157–175.
5. Th. Fernique, M. Sablik, *Weak colored local rules for planar tilings*, Ergodic Theory and Dynamical Systems **39** (2019), pp. 3322–3346.
6. N. Bédaride, Th. Fernique, *Weak local rules for planar octagonal tilings*, Israel Journal of Mathematics **222** (2017), pp. 63–89.
7. N. Bédaride, Th. Fernique, *No weak local rules for  $4p$ -fold tilings*, Discrete and Computational Geometry **54** (2015), pp. 980–992.
8. N. Bédaride, Th. Fernique, *When periodicities enforce aperiodicity*, Communications in Mathematical Physics **335** (2015), pp. 1099–1120.
9. N. Bédaride, Th. Fernique, *The Ammann-Beenker tilings revisited*, in Aperiodic Crystals S. Schmid, R. L. Withers, R. Lifshitz eds. (2013), pp. 59–65.
10. O. Bodini, Th. Fernique, M. Rao, E. Rémila, *Distances on rhombus tilings*, Theoretical Computer Science **412** (2011), pp. 4787–4794.
11. V. Berthé, Th. Fernique, *Brun expansions of stepped surfaces*, Discrete Mathematics **311** (2011), pp. 521–543.
12. Th. Fernique, N. Ollinger, *Combinatorial substitutions and sofic tilings*, in proceedings of JAC’10, (2010), Turku, Finland
13. Th. Fernique, D. Regnault, *Stochastic flips on dimer tilings*, in proceedings of AofA’10, (2010), Vienna, Austria
14. O. Bodini, Th. Fernique, D. Regnault, *Stochastic flips on two-letter words*, in proceedings of ANALCO’10 (2010), Austin, USA
15. Th. Fernique, *Generation and recognition of digital planes using multi-dimensional continued fractions*, Pattern Recognition **42** (2009), pp. 2229–2238.
16. O. Bodini, Th. Fernique, E. Rémila, *A Characterization of flip-accessibility for rhombus tilings of the whole plane*, Information and Computation **206** (2008), pp. 1065–1073.
17. P. Arnoux, V. Berthé, Th. Fernique, D. Jamet, *Functional stepped surfaces, flips and generalized substitutions*, Theoretical Computer Science **380** (2007), pp. 251–265.
18. Th. Fernique, *Local rule substitutions and stepped surfaces*, Theoretical Computer Science **380** (2007), pp. 317–329.
19. Th. Fernique, *Multidimensional Sturmian sequences and generalized substitutions*, International Journal of Foundations of Computer Science **17** (2006), pp. 575–600.