

# Jehanne Dousse

## Curriculum Vitae

Institut Camille Jordan, Université Claude Bernard Lyon 1  
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### Employment

- 2018– **Junior CNRS researcher (chargée de recherche)**, Institut Camille Jordan, Université Claude Bernard Lyon 1, France.
- 2015–2018 **Postdoctoral fellow**, Institut für Mathematik, Universität Zürich, Switzerland.

### Education

- 2012–2015 **Ph.D.**, Université Paris Diderot, France, Advisor: Jeremy Lovejoy.  
Title: *Integer partitions: Rogers-Ramanujan type identities and asymptotics*
- 2012–2013 **Master in Mathematics**, Université Pierre et Marie Curie - Paris 6, France.
- 2010–2012 **Master in Theoretical Computer Science**, École Normale Supérieure de Lyon and Université Paris Diderot, France.
- 2009–2010 **B.Sc. (Licence)**, École Normale Supérieure de Lyon, France.  
Major: theoretical computer science, minor: mathematics
- 2007–2009 **Preparatory classes to the competitive entrance examination to the french Grandes Écoles (Mathematics, Physics and Computer Science)**, Lycée Henri IV, Paris, France.

### Research interests

Combinatorics, Number Theory, Representation Theory

- Integer partitions and  $q$ -series
- Partition identities
- Asymptotics
- Modular forms
- Additive combinatorics
- Algebraic combinatorics
- Interactions between integer partitions and representation theory
- Representations of affine Lie algebras

## Grants

- 2022–2027 PI of the Eccellenza grant from the Swiss National Science Fund, 1'823'129 CHF  
Project title: “Partition identities and interactions”.
- 2019–2023 Member of the ANR project COMBINÉ, 247000 Euros.  
Project title: “Enumerative combinatorics interacting with algebra, number theory and physics”.
- 2019–2021 PI of the project Impulsion IDEXLYON, 65000 Euros.  
Project title: “Partition identities and representation theory”.
- 2016–2017 Forschungskredit (research credit), Universität Zürich, 86911 CHF.  
Project title: “Integer partitions: at the interface between combinatorics and number theory”.
- 2014–2015 Member of the French-Korean STAR project “Partial theta functions in Ramanujan’s lost notebook and beyond”, 10880 Euros.

## Preprints

4. *Partition identities from higher level crystals of  $A_1^{(1)}$*  (with L. Hardiman and I. Konan),  
<https://arxiv.org/abs/2111.10279>.
3. *Andrews–Gordon identities and commutative algebra* (with P. Afsharijoo, F. Jouhet and H. Mourtada),  
<https://arxiv.org/abs/2104.09422>.
2. *Generalisations of Capparelli’s and Primc’s identities, II: perfect  $A_{n-1}^{(1)}$  crystals and explicit character formulas* (with I. Konan),  
<https://arxiv.org/abs/1911.13189>.
1. *Generalisations of Capparelli’s and Primc’s identities, I: coloured Frobenius partitions and combinatorial proofs* (with I. Konan),  
<https://arxiv.org/abs/1911.13191>.

## Publications in international journals

20. *A  $q$ -multisum identity arising from finite chain ring probabilities* (with R. Osburn),  
Electron. J. Comb. 29(2), P2.4 (2022),  
<https://doi.org/10.37236/10691>.
19. *Multi-grounded partitions and character formulas* (with I. Konan),  
Adv. Math. 400, 108275 (2022),  
<https://doi.org/10.1016/j.aim.2022.108275>.
18. *Cylindric partitions and some new  $A_2$  Rogers–Ramanujan identities* (with S. Corteel and A. K. Uncu),  
Proc. Amer. Math. Soc. 150, 481–497 (2022),  
<https://doi.org/10.1090/proc/15570>.
17. *On partition identities of Capparelli and Primc*,  
Adv. Math. 370, 107245 (2020),  
<https://doi.org/10.1016/j.aim.2020.107245>.

16. *Asymptotics for skew standard Young tableaux via bounds for characters* (with V. Féray),  
Proc. Amer. Math. Soc. 147, 4189–4203 (2019),  
<https://doi.org/10.1090/proc/14558>.
15. *Generalizations of Capparelli's identity* (with J. Lovejoy),  
Bull. Lond. Math. Soc. 51, Issue 2, 193–206 (2019),  
<https://doi.org/10.1112/blms.12218>.
14. *Weighted dependency graphs and the Ising model* (with V. Féray),  
Ann. Inst. H. Poincaré Ser. D 6, Issue 4, 533–571 (2019),  
<https://doi.org/10.4171/AIHPD/78>.
13. *An overpartition analogue of the  $q$ -binomial coefficients, II: combinatorial proofs and  $(q, t)$ -log concavity* (with B. Kim),  
J. Combin. Theory Ser. A. 158, 228–253 (2018),  
<https://doi.org/10.1016/j.jcta.2018.03.011>.
12. *On a Rogers-Ramanujan type identity from crystal base theory* (with J. Lovejoy),  
Proc. Amer. Math. Soc. 146, 55–67 (2018),  
<https://doi.org/10.1090/proc/13694>.
11. *Unification, refinement and companions of generalisations of Schur's theorem*,  
Analytic Number Theory, Modular Forms and  $q$ -Hypergeometric Series, Springer,  
213–251 (2018),  
[https://doi.org/10.1007/978-3-319-68376-8\\_14](https://doi.org/10.1007/978-3-319-68376-8_14).
10. *Siladić's theorem: weighted words, refinement and companion*,  
Proc. Amer. Math. Soc. 145, 1997–2009 (2017),  
<https://doi.org/10.1090/proc/13376>.
9. *A generalisation of a second theorem of Andrews to overpartitions*,  
J. Combin. Theory Ser. A. 145, 101–128 (2017),  
<http://dx.doi.org/10.1016/j.jcta.2016.07.003>.
8. *Overpartitions with restricted odd differences* (with K. Bringmann, J. Lovejoy and K. Mahlburg),  
Electron. J. Combin. 22, no. 3, paper 3.17 (2015),  
<http://www.combinatorics.org/ojs/index.php/eljc/article/view/v22i3p17/0>.
7. *An overpartition analogue of the  $q$ -binomial coefficients* (with B. Kim),  
Ramanujan J. 42, 267–283 (2017),  
<http://dx.doi.org/10.1007/s11139-015-9718-4>.
6. *Asymptotic formulae for partition ranks* (with M. Mertens),  
Acta Arith. 168, 83–100 (2015),  
<http://dx.doi.org/10.4064/aa168-1-5>.
5. *A generalisation of a partition theorem of Andrews*,  
Monats. Math. 179, 227–251 (2016),  
<http://dx.doi.org/10.1007/s00605-015-0761-4>.

4. *On Dyson's crank conjecture and the uniform asymptotic behavior of certain inverse theta functions* (with K. Bringmann),  
Trans. Amer. Math. Soc. 368, 3141–3155 (2016),  
<http://dx.doi.org/10.1090/tran/6409>.
3. *A combinatorial proof and refinement of a partition identity of Siladić*,  
Eur. J. Comb. 39, 223–232 (2014),  
<http://dx.doi.org/10.1016/j.ejc.2014.01.008>.
2. *On a generalisation of Roth's theorem for arithmetic progressions and applications to sum-free subsets*,  
Math. Proc. Camb. Phil. Soc. 155, 331–341 (2013),  
<http://dx.doi.org/10.1017/S0305004113000327>.
1. *On generalizations of partition theorems of Schur and Andrews to overpartitions*,  
Ramanujan J. 35 (3), 339–360 (2014),  
<http://dx.doi.org/10.1007/s11139-013-9532-9>.

## Publications in conference proceedings

- 2022 Multi-grounded partitions and character formulas (extended abstract), with I. Konan, FPSAC 2022,  
<http://math.iisc.ac.in/fpsac2022/>.
- 2019 On partition identities of Capparelli and Primc (extended abstract), FPSAC 2019,  
<http://fpsac2019.fmf.uni-lj.si/resources/Proceedings/97.pdf>.
- 2017 The method of weighted words revisited, FPSAC 2017,  
<http://www.mat.univie.ac.at/~slc/s/66Dousse.pdf>.
- 2015 A generalisation of two partition theorems of Andrews, FPSAC 2015,  
<http://fpsac2015.sciencesconf.org/70995>.

## Talks

- 2022 Algebra and Logic Seminar, University of Denver, USA (online).
- 2022 Groups and Geometry seminar, Université de Genève, Switzerland.
- 2022 Journées de l'ANR Combiné, France (online).
- 2022 Théminaire, ENS Lyon, Lyon, France.
- 2021 Algebra and Number Theory Seminar, University College Dublin, Ireland (online).
- 2021 EFI Webinar, France (online).
- 2021 Mini-course at the summer school “Mathematical Summer in Paris”, Paris, France (online).
- 2021 Journées nationales du GDR-IM 2021, Paris, France (online).
- 2021 Workshop on Enumerative Combinatorics 2021, University College Dublin, Ireland (online).

- 2021 Colloquium, University of Maynooth, Ireland (online).
- 2020 Combinatorics and number theory seminar, Université Lyon I, France.
- 2020 Conference “Asymptotic algebraic combinatorics”, IPAM, UCLA, Los Angeles, USA.
- 2019 SFB-Statusseminar, Strobl, Austria.
- 2019 Séminaire de la détente mathématique, Maison des Mathématiques et de l’Informatique, Lyon, France.
- 2019 Number theory seminar, Université Blaise Pascal, Clermont-Ferrand, France.
- 2019 Combinatorics Seminar, UC Berkeley, USA.
- 2019 Number theory seminar, Université de Bordeaux, Bordeaux, France.
- 2019 FPSAC 2019, Ljubljana, Slovenia.
- 2019 Conference “Équations fonctionnelles et interactions”, Anglet, France.
- 2019 Algebra and Geometry seminar, La Sapienza, Rome, Italy.
- 2019 Colloquium, Hong Kong University, Hong Kong.
- 2019 Discrete Geometry and Combinatorics seminar, Cornell University, Ithaca, USA.
- 2019 Journées Alea, CIRM, Marseille, France.
- 2019 BIRS workshop “Asymptotic algebraic combinatorics”, BIRS, Banff, Canada.
- 2019 Probability seminar, ENS Lyon, Lyon, France.
- 2019 Théminaire, ENS Lyon, Lyon, France.
- 2019 2019  $q$ -day Meeting, KIAS, Seoul, South Korea.
- 2019 Combinatorics seminar, Sungkyunkwan University, Suwon, South Korea.
- 2019 Journée de l’équipe Algèbre, Géométrie, Logique, ICJ, Lyon, France.
- 2018 Journée de l’équipe Combinatoire et Théories des Nombres, ICJ, Saint-Étienne, France.
- 2018 Discrete math days, Istanbul Center for Mathematical Sciences (IMBM), Boğaziçi University, Istanbul, Turkey.
- 2018 Algebra and number theory seminar, Sabanci University, Istanbul, Turkey.
- 2018 George Andrews’ 80th birthday conference, The Pennsylvania State University, State College, USA.
- 2018 Combinatorics and geometry seminar, University of Washington, Seattle, USA.
- 2018 Combinatorics and number theory seminar, Université Lyon I, France.
- 2018 "Vertex algebras and related topics" conference, University of Zagreb, Croatia.
- 2018 Enumerative combinatorics workshop, MFO, Oberwolfach, Germany.
- 2017 Colloquium, Queen Mary University, London, United Kingdom.
- 2017 Colloquium, Carnegie Mellon University, Pittsburgh, USA.
- 2017 Journée Charles Hermite "Théorie des graphes et théorie des nombres", Université de Lorraine, Nancy, France.
- 2017 Colloquium, Hausdorff Center for Mathematics, Universität Bonn, Germany.
- 2017 Algebra Seminar, University of Zagreb, Croatia.
- 2017 Combinatorics Seminar, UC Berkeley, USA.

- 2017 Algebra and Discrete Math Seminar, UC Davis, USA.
- 2017 Discrete Math Seminar, Simon Fraser University, Vancouver, Canada.
- 2017 FPSAC 2017, Queen Mary University, London, United Kingdom.
- 2017 Intercity Number Theory Seminar, Utrecht University, The Netherlands.
- 2016 Number theory seminar, Institut Joseph Fourier, Grenoble, France.
- 2016 Discrete mathematics seminar, Universität Zürich, Switzerland.
- 2016 “Computations and proofs” seminar, INRIA, Palaiseau, France.
- 2016 Alladi60 conference, University of Florida, Gainesville.
- 2016 Journées Alea, CIRM, Marseille, France.
- 2016 Discrete mathematics seminar, Universität Zürich, Switzerland.
- 2016 Journées de Combinatoire de Bordeaux, LaBRI, Bordeaux, France.
- 2015 Séminaire Fajole, IHP, Paris, France.
- 2015 FPSAC 2015, KAIST, Daejeon, South Korea.
- 2015 Number theory seminar, KIAS, Seoul, South Korea.
- 2015 Combinatorics seminar, LIAFA, Université Paris Diderot, France.
- 2015 Discrete mathematics Seminar, Universität Zürich, Switzerland.
- 2015  $q$ -difference equations seminar, Université Paul Sabatier, Toulouse, France.
- 2014 Number theory seminar, Université de Lorraine, Nancy, France.
- 2014 Number theory seminar, KIAS, Seoul, South Korea.
- 2014 Combinatorics seminar, LIX, École Polytechnique, France.
- 2014 Atelier stéphanois de combinatoire additive, Université de Saint-Étienne, France.
- 2014 Algebra and number theory Seminar, University College Dublin, Ireland.
- 2014 Journées holonomes, Institut Joseph Fourier, Grenoble, France.
- 2013 Séminaire CAESAR, École Polytechnique, France.
- 2013 Combinatorics seminar, LIAFA, Université Paris Diderot, France.
- 2013 Number theory seminar, University of Cologne, Germany.
- 2013 28th Arithmetic Days, Grenoble, France.
- 2013 Journées du GT Combinatoire Algébrique, Université Marne-la-Vallée, France.
- 2013 Séminaire CALIN, Université Paris XIII, France.
- 2013 Combinatorics and number theory seminar, Université Lyon I, France.
- 2012 12th Forum des jeunes mathématiciennes, IHP, Paris, France.

## Supervision of postdoctoral fellows

- 2021–2023 Isaac Konan, PhD 2020 Université Paris Diderot
- 2019–2020 Leonard Hardiman, PhD 2019 University of Bath.

## Research visits

- January 2022 Research in Pairs, MFO, Oberwolfach, Germany.  
Collaborators: Jeremy Lovejoy, Robert Osburn and Armin Straub

- November 2019 Johann Radon Institute for Computational and Applied Mathematics (RICAM), Linz, Austria.  
Collaborator: Ali Kemal Uncu
- November 2019 University of California, Berkeley, USA.  
Collaborator: Sylvie Corteel
- October 2019 American Institute of Mathematics, San José, USA.  
Collaborators: Alejandro Morales, Igor Pak, Greta Panova, Leonid Petrov, Damir Yelussizov
- October 2019 Université Grenoble Alpes, Grenoble, France.  
Collaborator: Tanguy Rivoal
- June 2019 La Sapienza, Rome, Italy.  
Collaborator: Stefano Capparelli
- April-May 2019 Hong Kong University, Hong Kong.  
Collaborator: Min-Joo Jang
- January 2019 Seoul National University of Science and Technology, Seoul, South Korea.  
Collaborator: Byungchan Kim
- October 2017 University of Zagreb, Zagreb, Croatia.  
Collaborator: Tomislav Šikić
- June 2016 Université Paris Diderot, Paris, France.  
Collaborator: Sylvie Corteel
- July 2015 Seoul National University of Science and Technology, Seoul, South Korea.  
Collaborator: Byungchan Kim
- August 2014 Seoul National University of Science and Technology, Seoul, South Korea.  
Collaborator: Byungchan Kim
- October 2013 Mathematical Institute, University of Cologne, Germany.  
Collaborator: Kathrin Bringmann
- March–July 2012 Research internship supervised by Ben Green, Centre for Mathematical Sciences, University of Cambridge: *A generalisation of Roth's theorem*.
- June–July 2011 Research internship supervised by Vic Reiner and Pavlo Pylyavskyy, School of Mathematics, University of Minnesota, Minneapolis: *Strongly connected graphs and polynomials*.
- February–May 2011 Research internship supervised by Jeremy Lovejoy, LIAFA, Université Paris Diderot: *Schur's theorem and its generalisations*.
- June–July 2010 Research internship supervised by Frédéric Havet and Dorian Mazauric, INRIA, Sophia Antipolis: *Representation of interval graphs*.

## Teaching

- 2017–2018 Lecturer, Universität Zürich: *Combinatorics of integer partitions* (graduate course).
- 2017–2018 Teaching assistant, Universität Zürich: *Foundations of mathematics* (undergraduate course).

- 2016–2017 Teaching assistant, Universität Zürich: *Combinatorics of permutations* (undergraduate seminar).
- 2016–2017 Teaching assistant, Universität Zürich: *Foundations of mathematics* (undergraduate course).
- 2015–2016 Lecturer, Universität Zürich: *Combinatorics of integer partitions* (graduate course).
- 2012–2015 Teaching assistant, Université Paris Diderot: *q-series and partitions* (graduate course).
- 2014–2015 Teaching assistant, Université Paris Diderot: *Elementary Algebra and Analysis 1* (undergraduate course).
- 2013–2014 Teaching assistant, Université Paris Diderot: *Elementary Algebra and Analysis 2* (undergraduate course).
- 2012–2013 Colles (preparation to the oral examination of the French Grandes Écoles) in Mathematics, Lycée Chaptal, Paris.

## Organisation of conferences and seminars

- 2022 Co-organiser of the 87th Séminaire Lotharingien de Combinatoire (SLC), Saint-Paul-en-Jarez, France.
- 2022 Program committee of FPSAC 2022, Bangalore, India.
- 2021 Co-organiser of the “Lattice Paths, Combinatorics and Interactions” conference (in hybrid form due to COVID19), CIRM, Luminy, France.
- 2020 Co-organiser of the “Additive Combinatorics in Marseille” conference (in hybrid form due to COVID19), CIRM, Luminy, France.
- 2018–2022 Co-organiser of the Combinatorics and Number theory seminar at ICJ, Université Lyon 1.
- 2013 Member of the organising committee of FPSAC 2013, Paris, France.

## Reviewing activities

- Referee for *Advances in Mathematics*, *Australasian Journal of Combinatorics*, *Combinatorial Theory*, *Combinatorics*, *European Journal of Combinatorics*, *FPSAC*, *Integers*, *International Journal of Number Theory*, *Journal of Combinatorial Theory Series A*, *Journal of Mathematical Analysis and Applications*, *Journal of Number Theory*, *Proceedings of the American Mathematical Society*, *Transactions of the American Mathematical Society*, *Vietnam Journal of Mathematics*, ...
- Former reviewer for *AMS Mathematical Reviews*

## Administrative responsibilities

- 2022 Member of two hiring committees for French “maître de conférences” (in Lyon and Paris).
- 2021–2022 Member of the scientific council of Institut Camille Jordan, Lyon, France.



## — Languages

French	Native speaker
English	Fluent
German	Advanced
Italian	Advanced
Japanese	Intermediate
Spanish	Basic
Russian	Basic