

Jehanne Dousse

Curriculum Vitae

Section de mathématiques, Université de Genève
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Employment

- 2022–present **Eccellenza Assistant Professor**, Section de mathématiques, Université de Genève, Suisse.
- 2018–present **Junior CNRS researcher (chargée de recherche)**, Institut Camille Jordan, Université Claude Bernard Lyon 1, France (on leave).
- 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, 247'000 Euros.
Project title: “Enumerative combinatorics interacting with algebra, number theory and physics”.
- 2019–2021 PI of the project Impulsion IDEXLYON, 65'000 Euros.
Project title: “Partition identities and representation theory”.
- 2016–2017 Forschungskredit (research credit), Universität Zürich, 86'911 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”, 10'880 Euros.

Supervision of postdoctoral fellows

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

Supervision of PhD students

- 2023– Benedek Dombos, Msc. Universität Bonn.

Supervision of master students

- 2021–2022 Alain Luca Schmid, Universität Zürich (master’s thesis).
- 2023– Laure Velenik, Université de Genève (travail de lecture).

Preprints

3. *Bilateral Bailey lattices and Andrews-Gordon type identities* (with F. Jouhet and I. Konan),
<https://arxiv.org/abs/2307.02346>.
2. *Characters of level 1 standard modules of $C_n^{(1)}$ as generating functions for generalised partitions* (with I. Konan),
<https://arxiv.org/abs/2212.12728>.
1. *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>.

Publications in international journals

23. *New companions to the Andrews–Gordon identities motivated by commutative algebra* (with P. Afsharijoo, F. Jouhet and H. Mourtada), *Adv. Math.* 417, 108946 (2023), <https://doi.org/10.1016/j.aim.2023.108946>.
22. *Partition identities from higher level crystals of $A_1^{(1)}$* (with L. Hardiman and I. Konan), *Proc. Amer. Math. Soc.*, to appear <https://arxiv.org/abs/2111.10279>.
21. *Generalisations of Capparelli’s and Primc’s identities, I: coloured Frobenius partitions and combinatorial proofs* (with I. Konan), *Adv. Math.* 408, 108571 (2022), <https://doi.org/10.1016/j.aim.2022.108571>.
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.
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>.

Teaching

- 2022–2023 Lecturer, Université de Genève: *Discrete mathematics* (bachelor course).
- 2022–2023 Lecturer, Université de Genève: *Combinatorics of integer partitions* (graduate course).
- 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.

Talks

- 2023 Journées du GDR EFI, Université de Rennes, France.
- 2023 Arithmétique en Plat Pays, Université de Lille, France.
- 2023 Rocky Mountain Representation Theory Seminar, Colorado, USA (online).
- 2023 Mathematical Springtime in Rome, La Sapienza, Rome, Italy.
- 2023 Algebra and number theory seminar, University College Dublin, Ireland.
- 2023 Mini-workshop on vertex algebras and applications, University of Zagreb, Croatia.

- 2022 Enumerative combinatorics workshop, MFO, Oberwolfach, Germany.
- 2022 Workshop on cylindric partitions, Johann Radon Institute for Computational and Applied Mathematics (RICAM), Linz, Austria.
- 2022 Séminaire Fajole, IHP, Paris, France.
- 2022 Croatian Mathematical Conference, Split, Croatia.
- 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 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.

Summer schools

- 2022 Course at “Second Workshop on Integer Partitions”, Nesin Math Village, Turkey.
- 2021 Mini-course at “Mathematical Summer in Paris”, Paris, France (online).

Research visits

- April 2023 University College Dublin, Ireland.
Collaborator: Robert Osburn
- March 2023 University of Zagreb, Croatia.
Collaborator: Mirko Primc
- 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 Yeliussizov
- 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 Mathe-
matics, University of Minnesota, Minneapolis: *Strongly connected graphs and polyno-
mials.*
- 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.*

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, Com-
binatorial Theory, Combinatorics, European Journal of Combinatorics, FPSAC,
Integers, International Journal of Number Theory, Journal of Combinatorial The-
ory Series A, Journal of Mathematical Analysis and Applications, Journal of Number
Theory, Proceedings of the American Mathematical Society, Ramanujan Journal,
Transactions of the American Mathematical Society, Vietnam Journal of Mathemat-
ics, ...
- 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