RAZVAN G. GURAU
Institute for Theoretical Physics,
Ruprecht Karls University Heidelberg,
Philosophenweg 19, 69120 Heidelberg, Germany

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Position: Professor (W3)
Birth date : September 26, 1980
Nationality : Romanian
Civil status: married

Awards

2012 **Hermann Weyl Prize 2012,** citation: "Razvan Gurau has discovered and developed the theory of coloured random tensors, which generalises beyond two dimensions the theory of random matrices. His unexpected discovery opens up new avenues for investigation, with potential applications in probability theory, statistical mechanics, integrable systems, quantum field theory and random discrete geometries."

Funding

2018 **ERC Consolidator grant,** Random Tensors and Field Theory (818066), 1 672 084 €, panel PE2

Positions

2020–present **Professor (W3),** Ruprecht Karls University Heidelberg, Institute for Theoretical Physics, Heidelberg, Germany.

2019–present **Directeur de Recherche,** CNRS, Centre de Physique Théorique, École Polytechnique, Palaiseau, France.

2012–2019 **Chargé de Recherche,** CNRS, Centre de Physique Théorique, École Polytechnique, Palaiseau, France.

2012–present **Visiting Fellow,** The Perimeter Institute for Theoretical Physics, Waterloo, ON, Canada.

2017–2020 **Honorary Lecturer,** University of East Anglia, Norwich, UK.

2010–2012 **Senior Postdoctoral Researcher,** The Perimeter Institute for Theoretical Physics, Waterloo, ON, Canada.

2008–2010 **Postdoctoral Researcher,** The Perimeter Institute for Theoretical Physics, Waterloo, ON, Canada.

Habilitation

2015 **Habilitation à diriger les recherches, thesis titled: "Random Tensors",** Université Paris Sud 11, Orsay, France. President of the jury: Alain Connes.

Education

2005–2008 **PhD thesis, title: "La renomalisation dans la théorie non commutative des champs",** advisor: V. Rivasseau, Laboratoire de Physique Théorique, CNRS UMR 8627 Université Paris Sud 11, Orsay, France.

2004–2005 **École Normale Supérieure de Paris,** Master of Science: DEA de Physique Théorique de la Region Parisienne (16.05/20).

2002–2004 **École Normale Supérieure de Paris,** Bachelor of Science: Maitrise de Physique (17/20).

1999–2002 **University of Bucharest, Physics Department,** 1st-3rd year undergraduate.

Significant results

Context. The large–N limit in field theory allows to restrict the perturbative expansion to specific classes of Feynman diagrams. For vectors with N components one can analytically solve the models, but for $N \times N$ matrices the large–N limit in more than 0 dimensions is exceedingly complicated. Tensor models were introduced long ago as the generalization of matrix models to higher rank. However, for twenty years there was no significant advance because a $1/N$ expansion for tensors could not be found.

My contribution. *I established the $1/N$ expansion of random tensors and discovered a new (and the last possible) universality class of large–N field theories: the melonic theories.*

Why it matters. Building on my results, Witten proved in 2016 that a one dimensional fermionic tensor field theory flows to a *strongly coupled conformal field theory* in the infrared. Following Witten's work, Klebanov, Tarnopolsky and collaborators established that bosonic tensor field theories in three and four dimensions exhibit a new class of renormalization group fixed points. Myself and collaborators showed that some of these fixed points are stable and infrared attractive. The study of higher dimensional tensor field theories is pursued in earnest, with work by Volovich and collaborators, Tseytlin and collaborators, Minwalla and collaborators, etc..

The $1/N$ expansion in tensors I discovered gives the third (and last) universality class of such expansions, different from both the vector and the matrix case. Random tensors are the straightforward generalization of random vectors and random matrices to higher rank, but in terms of complexity the melonic large–N limit sits in between the vector large–N limit and the planar large–N limit. Tensor field theories are rich enough to be non trivial but simple enough to be analytically tractable.

Distinguished Papers

2012 **Annales Henri Poincaré, Distinguished Paper Award for the year 2012,** for the paper "*The complete 1/N expansion of colored tensor models in arbitrary dimension,* " Annales Henri Poincare **13**, 399 (2012).

2011 **Annales Henri Poincaré, Distinguished Paper Award for the year 2011,** for the paper "*The 1/N expansion of colored tensor models,*" Annales Henri Poincare **12**, 829 (2011).

2010 **IOP Selected Paper 2010, recommended readers communication,** for the paper "*Lost in Translation: Topological Singularities in Group Field Theory,*" Class. Quant. Grav. **27**, 235023 (2010).

Books

2016 **R. Gurau,** "*Random Tensors,*" Oxford University Press, 2016, ISBN: 9780198787938.

Refereed publications and preprints

2020 **D. Benedetti, R. Gurau, S. Harribey,** "*Trifundamental quartic model,*" Phys. Rev. D **103**, no.4, 046018 (2021) arXiv:2011.11276 [hep-th].

B. Collins, R. Gurau, L. Lionni, "*The tensor Harish-Chandra-Itzykson-Zuber integral I: Weingarten calculus and a generalization of monotone Hurwitz numbers,*" arXiv:2010.13661 [math.CO].

D. Benedetti, R. Gurau, S. Harribey, K. Suzuki, "*Long-range multi-scalar models at three loops,*" J. Phys. A **53**, no.44, 445008 (2020) arXiv:2007.04603 [hep-th].

R. Gurau, "*On the generalization of the Wigner semicircle law to real symmetric tensors,*" arXiv:2004.02660 [math-ph].

D. Benedetti, R. Gurau and K. Suzuki, "*Conformal symmetry and composite operators in the $O(N)^3$ tensor field theory,*" JHEP **06**, 113 (2020) arXiv:2002.07652 [hep-th].

2019 **D. Benedetti, R. Gurau, S. Harribey, K. Suzuki,** "*Hints of unitarity at large N in the $O(N)^3$ tensor field theory,*" JHEP **02**, 072 (2020) arXiv:1909.07767 [hep-th].

R. Gurau, "*Notes on Tensor Models and Tensor Field Theories,*" arXiv:1907.03531 [hep-th].

D. Benedetti, R. Gurau, S. Harribey, "*Line of fixed points in a bosonic tensor model,*" JHEP **1906**, 053 (2019), arXiv:1903.03578 [hep-th].

2018 **D. Benedetti and R. Gurau,** "*2PI effective action for the SYK model and tensor field theories,*" JHEP **1805**, 156 (2018), arXiv:1802.05500 [hep-th].

2017 **D. Benedetti, S. Carrozza, R. Gurau, M. Kolanowski,** "*The $1/N$ expansion of the symmetric traceless and the antisymmetric tensor models in rank three,*" Commun. Math. Phys. (2019), arXiv:1712.00249 [hep-th].

D. Benedetti, S. Carrozza, R. Gurau, A. Sfondrini, "*Tensorial Gross-Neveu models,*", JHEP **1801**, 003 (2018), arXiv:1710.10253 [hep-th].

R. Gurau, "*The $1/N$ expansion of tensor models with two symmetric tensors,*" Commun. Math. Phys. **360**, no. 3, 985 (2018), arXiv:1706.05328 [hep-th].

R. Gurau, "*The $\imath\epsilon$ prescription in the SYK model,*" Journal of Physics Communications, **2**, no. 1, 015003, (2018), arXiv:1705.08581 [hep-th].

R. Gurau, "*Quenched equals annealed at leading order in the colored SYK model,*" Europhys. Lett. **119**, no. 3, 30003 (2017), arXiv:1702.04228 [hep-th].

2016 **R. Gurau,** "*The complete $1/N$ expansion of a SYK–like tensor model,*" Nucl. Phys. B **916**, 386 (2017), arXiv:1611.04032 [hep-th].

R. Gurau, "*Invitation to Random Tensors,*" SIGMA **12**, 094 (2016), arXiv:1609.06439 [hep-th].

R. Gurau, "*The Wilson loop in the Gaussian Unitary Ensemble,*" arXiv:1604.08856 [math-ph].

2015 **D. Benedetti, R. Gurau,** "*Symmetry breaking in tensor models,*" Phys. Rev. D **92**, 104041 (2015), arXiv:1506.08542 [hep-th].

R. Gurau, A. Tanasa, D. R. Youmans, "*The double scaling limit of the multi-orientable tensor model,*" Europhys. Lett. **111**, 21002 (2015), arXiv:1505.00586 [hep-th].

T. Delepouve, R. Gurau, "*Phase Transition in Tensor Models,*" JHEP **1506**, 178 (2015), arXiv:1504.05745 [hep-th].

Refereed publications and preprints

2014 **R. Gurau, T. Krajewski,** "*Analyticity results for the cumulants in a random matrix model,*" AIHP (D) **2**, 169 (2015), arXiv:1409.1705 [math-ph].

A. Baratin, L. Freidel, R. Gurau, "*Weighting bubbles in group field theory,*" Phys. Rev. D **90**, 024069 (2014), arXiv:1405.2808 [hep-th].

V. Bonzom, R. Gurau, J. P. Ryan, A. Tanasa, "*The double scaling limit of random tensor models,*" JHEP **1409**, 051 (2014), arXiv:1404.7517 [hep-th].

T. Delepouve, R. Gurau, V. Rivasseau, "*Universality and Borel Summability of Arbitrary Quartic Tensor Models,*" AIHP (B) **52**, 821 (2016), arXiv:1403.0170 [hep-th].

R. Gurau, V. Rivasseau, A. Sfondrini, "*Renormalization: an advanced overview,*" arXiv:1401.5003 [hep-th].

2013 **R. Gurau, V. Rivasseau,** "*The Multiscale Loop Vertex Expansion,*" Annales Henri Poincare **16**, no. 8, 1869 (2015), arXiv:1312.7226 [math-ph].

S. Dartois, R. Gurau, V. Rivasseau, "*Double Scaling in Tensor Models with a Quartic Interaction,*" JHEP **1309**, 088 (2013), arXiv:1307.5281 [hep-th].

R. Gurau, G. Schaeffer, "*Regular colored graphs of positive degree,*" AIHP(D) **3**, Issue 3, 257 (2016), arXiv:1307.5279 [math.CO].

R. Gurau, "*The $1/N$ Expansion of Tensor Models Beyond Perturbation Theory,*" Commun. Math. Phys. **330**, 973 (2014), arXiv:1304.2666 [math-ph].

R. Gurau, J. P. Ryan, "*Melons are branched polymers,*" Annales Henri Poincare **15**, no. 11, 2085 (2014), arXiv:1302.4386 [math-ph].

2012 **R. Gurau,** "*A review of the large N limit of tensor models,*" Proceedings of The XXIX International Colloquium on Group-Theoretical Methods in Physics, August 20-26 2012, Chern Institute of Mathematics, Nankai University, Tianjin, China, arXiv:1209.4295 [math-ph].

R. Gurau, "*A review of the 1/N expansion in random tensor models,*" Proceedings of the International Congress on Mathematical Physics 2012 - Topical Section: Quantum Field Theory, arXiv:1209.3252 [math-ph].

V. Bonzom, R. Gurau, M. Smerlak, "*Universality in p-spin glasses with correlated disorder,*" J. Stat. Mech. (2013) L02003, arXiv:1206.5539 [cond-mat.dis-nn].

V. Bonzom, R. Gurau, "*Counting line-colored D-ary trees,*" arXiv:1206.4203 [math-ph].

R. Gurau, "*The Schwinger Dyson equations and the algebra of constraints of random tensor models at all orders,*" Nucl. Phys. B **865** (2012), arXiv:1203.4965 [hep-th].

V. Bonzom, R. Gurau, V. Rivasseau, "*Random tensor models in the large N limit: Uncoloring the colored tensor models,*" Phys. Rev. D **85**, 084037 (2012), arXiv:1202.3637 [hep-th].

Refereed publications and preprints

2011 **R. Gurau,** "*Universality for Random Tensors,*" AIHP (B) **50** 4, (2014), arXiv:1111.0519 [math.PR].

R. Gurau, "*The Double Scaling Limit in Arbitrary Dimensions: A Toy Model,*" Phys. Rev. D **84**, 124051 (2011), arXiv:1110.2460 [hep-th].

R. Gurau, J. P. Ryan, "*Colored Tensor Models - a review,*" SIGMA **8**, 020 (2012), arXiv:1109.4812 [hep-th].

V. Bonzom, R. Gurau, V. Rivasseau, "*The Ising Model on Random Lattices in Arbitrary Dimensions,*" Phys. Lett. B **711**, 88 (2012), arXiv:1108.6269 [hep-th].

D. Benedetti, R. Gurau, "*Phase Transition in Dually Weighted Colored Tensor Models,*" Nucl. Phys. B **855**, 420 (2012), arXiv:1108.5389 [hep-th].

R. Gurau, "*A generalization of the Virasoro algebra to arbitrary dimensions,*" Nucl. Phys. B **852**, 592 (2011), arXiv:1105.6072 [hep-th].

V. Bonzom, R. Gurau, A. Riello, V. Rivasseau, "*Critical behavior of colored tensor models in the large N limit,*" Nucl. Phys. B **853**, 174 (2011), arXiv:1105.3122 [hep-th].

R. Gurau, "*The complete 1/N expansion of colored tensor models in arbitrary dimension,*" Annales Henri Poincare **13**, 399 (2012), arXiv:1102.5759 [gr-qc].

R. Gurau, V. Rivasseau, "*The 1/N expansion of colored tensor models in arbitrary dimension,*" Europhys. Lett. **95**, 50004 (2011), arXiv:1101.4182 [gr-qc].

2010 **R. Gurau,** "*The 1/N expansion of colored tensor models,*" Annales Henri Poincare **12**, 829 (2011), arXiv:1011.2726 [gr-qc].

J. B. Geloun, R. Gurau, "*Asymptotes in $SU(2)$ Recoupling Theory: Wigner Matrices, $3j$ Symbols, and Character Localization,*" Annales Henri Poincare **12**, 77 (2011), arXiv:1009.5632 [math-ph].

J. B. Geloun, R. Gurau, V. Rivasseau, "*EPRL/FK Group Field Theory,*" Europhys. Lett. **92**, 60008 (2010), arXiv:1008.0354 [hep-th].

R. Gurau, "*Lost in Translation: Topological Singularities in Group Field Theory,*" Class. Quant. Grav. **27**, 235023 (2010), arXiv:1006.0714 [hep-th].

R. Gurau, "*A Diagrammatic Equation for Oriented Planar Graphs,*" Nucl. Phys. B **839**, 580 (2010), arXiv:1003.2187 [hep-th].

2009 **R. Gurau,** "*Topological Graph Polynomials in Colored Group Field Theory,*" Annales Henri Poincare **11**, 565 (2010), arXiv:0911.1945 [hep-th].

R. Gurau, "*Colored Group Field Theory,*" Commun. Math. Phys. **304**, 69 (2011), arXiv:0907.2582 [hep-th].

L. Freidel, R. Gurau, D. Oriti, "*Group field theory renormalization - the 3d case: power counting of divergences,*" Phys. Rev. D **80**, 044007 (2009), arXiv:0905.3772 [hep-th].

R. Gurau, O. J. Rosten, "*Wilsonian Renormalization of Noncommutative Scalar Field Theory,*" JHEP **0907**, 064 (2009), arXiv:0902.4888 [hep-th] .

Refereed publications and preprints

2008 **R. Gurau,** "*The Ponzano-Regge asymptotic of the 6j symbol: an elementary proof,*" Annales Henri Poincare **9**, 1413 (2008), arXiv:0808.3533 [math-ph].

R. Gurau, J. Magnen, V. Rivasseau, "*Tree Quantum Field Theory,*" Annales Henri Poincare **10**, 867 (2009), arXiv:0807.4122 [hep-th].

P. Bieliavsky, R. Gurau, V. Rivasseau, "*Non Commutative Field Theory on Rank One Symmetric Spaces,*" J. Noncom. Geom. **3**, 99 (2009), arXiv:0806.4255 [hep-th].

J. B. Geloun, R. Gurau, V. Rivasseau, "*Vanishing beta function for Grosse-Wulkenhaar model in a magnetic field,*" Phys. Lett. B **671**, 284 (2009), arXiv:0805.4362 [hep-th].

R. Gurau, J. Magnen, V. Rivasseau, A. Tanasa, "*A translation-invariant renormalizable non-commutative scalar model,*" Commun. Math. Phys. **287**, 275 (2009), arXiv:0802.0791 [math-ph].

2007 **R. Gurau,** "*Exorcizing the Landau ghost in non commutative quantum field theory,*" J. Phys. Conf. Ser. **103**, 012011 (2008). Proceedings of the Conference on Non-commutative Geometry and Physics, 23-27 Apr 2007, Orsay, France, arXiv:0709.4169 [hep-th].

R. Gurau, A. Tanasa, "*Dimensional regularization and renormalization of non-commutative QFT,*" Annales Henri Poincare **9**, 655 (2008), arXiv:0706.1147 [math-ph].

R. Gurau, A. P. C. Malbouisson, V. Rivasseau, A. Tanasa, "*Non-Commutative Complete Mellin Representation for Feynman Amplitudes,*" Lett. Math. Phys. **81**, 161 (2007), arXiv:0705.3437 [math-ph].

2006 **M. Disertori, R. Gurau, J. Magnen, V. Rivasseau,** "*Vanishing of beta function of non commutative phi(4)**4 theory to all orders,*" Phys. Lett. B **649**, 95 (2007), arXiv:hep-th/0612251.

R. Gurau, V. Rivasseau, "*Parametric representation of noncommutative field theory,*" Commun. Math. Phys. **272**, 811 (2007), arXiv:math-ph/0606030.

2005 **R. Gurau, J. Magnen, V. Rivasseau, F. Vignes-Tourneret,** "*Renormalization of non-commutative phi**4(4) field theory in x space,*" Commun. Math. Phys. **267**, 515 (2006), arXiv:hep-th/0512271.

R. Gurau, V. Rivasseau, F. Vignes-Tourneret, "*Propagators for noncommutative field theories,*" Annales Henri Poincare **7**, 1601 (2006), arXiv:hep-th/0512071.

Colloquia

2017 **November 6th, Colloquium of the Physics Department,** Brown University, talk titled *Invitation to Random Tensors.*

February 16th, Colloquium of the Physics Department, Princeton University, talk titled *Invitation to Random Tensors.*

Scientific Congress Presentations

2013 **July 22nd - 26th, Loops 13,** The Perimeter Institute for Theoretical Physics, talk titled *The non perturbative* $1/N$ *expansion of Tensor Models.*

2012 **August 20th - 26th, The XXIX International Colloquium on Group-Theoretical Methods in Physics, GROUP 29** Nankai University, talk titled *The Large N Limit of Tensor Models.*

August 6th - 11th, International congress on mathematical physics ICMP2012 Aalborg, talk titled *The 1/N expansion in random tensor models.*

May 5th - 7th, Geometry and Physics GAP 2012 The Perimeter Institute for Theoretical Physics, talk titled *The Large N Limit of Tensor Models.*

2008 **June 30th - July 4th Quantum Geometry and Quantum Gravity Conference, QG2 2008,** University of Nottingham, talk titled *Renormalization and Non Commutative Quantum Field Theory in curved background.*

Conference Presentations

2019 **November 4th - November 6th, First French-German Meeting in Physics, Mathematics and Artificial Intelligence Theory** Paris talk titled *Random Tensors for all seasons.*

September 24th - September 27th, DESY Theory Workshop, Quantum field theory meets gravity DESY Hamburg talk titled *On tensor field theories.*

March 25th - March 26th, 61st Anniversary conference, Centre de Physique Thèorique Ecole Polytechnique Ecole Polytechnique talk titled *From constructive to tensor field theory.*

February 25th - March 1st, Chaos, Holography and Coadjoint Orbits, University of Geneva talk titled *On fixed points in tensor field theory.*

2018 **November 5th - November 9th, 2018 Nagoya international workshop on the Physics and Mathematics of Discrete Geometries,** Nagoya University talk titled *Invitation to random tensors and tensor field theory.*

October 31st - November 2dn, OIST Mini Symposium "Holographic Tensors", Okinawa Institute of Science and Technology talk titled *Invitation to random tensors and tensor field theory.*

October 3rd - October 5th, CRM-PCTS Workshop: Critical Phenomena in Statistical Mechanics and Quantum Field Theory, Princeton Center for Theoretical Science talk titled *The 2PI action in tensor field theories.*

2017 **October 23rd - October 27th, Probabilistic techniques and Quantum Information Theory,** Institut Henri Poincaré, Paris talk titled *Invitation to Random Tensors.*

October 4th - October 6th, Many-Body Quantum Chaos, Bad Metals and Holography, Nordita Stockholm, talk titled *The melonic universality class.*

May 29th - June 1st, Black Holes, Quantum Information, Entanglement and All That, Institut des Hautes Études Scientifiques, Bures-sur-Yvette talk titled *The melonic universality class.*

January 30th - February 3rd, Quantum Spacetime '17, Faculdade de Ciências da Universidade do Porto talk titled *Invitation to Random Tensors.*

2016 **October 17th -21st, 2nd French Russian Conference on Random Geometry and Physics,** Institut Henri Poincaré, Paris talk titled *Random tensors, a "functional integral" point of view.*

2015 **November 5th - 7th, Workshop on Strongly-Interacting Field Theories,** Friedrich-Schiller-Universität Jena, talk titled *Non perturbative results in matrix and tensor models.*

April 7th - 10th, Quantum Gravity in Paris, Laboratoire de Physique Théorique d'Orsay, talk titled *Non perturbative results in matrix and tensor models.*

March 23rd - 27th, Probing the Fundamental Nature of Spacetime with the Renormalization Group, Nordita Stockholm, talk titled *Phase transitions in Tensor Models.*

2014 **July 14th - 18th, Random Tensors,** Erwin Schrodinger Institute Wien, talk titled *Tensor models in the large N limit.*

April 22nd - 25th, Renormalization Group Approaches to Quantum Gravity, The Perimeter Institute for Theoretical Physics, talk titled *Tensor models in the large N limit.*

January 6th - 10th, Regards sur la gravité quantique, Université Blaise Pascal Clermont-Ferrand, talk titled *The non perturbative* $1/N$ *expansion of tensor models.*

Conference Presentations

2012 **March 26th - 29th, Quantum Gravity in Paris,** Laboratoire de Physique Théorique d'Orsay, talk titled *The Large N Limit of Tensor Models.*

March 5th - 7th, Exploring Quantum Space-Time, WE-Heraeus-Seminar, talk titled *The Large N Limit of Tensor Models.*

2011 **November 21st, Renormalisabilité en gravité quantique : aspects combinatoires, analytiques et géométriques,** Institut Henri Poincaré, talk titled *(Colored) Tensor Models.*

March 21st - 23rd, Quantum space time from discreteness to continuum, Laboratoire de Physique Théorique d'Orsay, talk titled *The* $1/N$ *expansion in Colored Tensor Models.*

2009 **September 6th - 12th, Noncommutative Geometry Conference,** Mathematisches Forschungsinstitut Oberwolfach, talk titled *Group Field Theory.*

July 28th - 30th, Constructive and Multiscale Methods in Quantum Theory, CMQ 09, Physikalisches Institut Heidelberg, talk titled *Two points of view on quantum field theory.*

March 23rd - April 3rd, Algebraic and Combinatorial Structures in Quantum Field Theory, ACQFT 09, Institut d'Études Scientifiques de Cargèse, talk titled *Hunting bubbles in Group Field Theory.*

2008 **April 7th - 11th, Combinatorial Identities and their Applications in Statistical Mechanics,** Isaac Newton Institute for Mathematical Sciences Cambridge, talk titled *Parametric representation of non commutative quantum field theory.*

2007 **November 26nd - 30th, Non Commutative Quantum Field Theory Workshop,** Erwin Schrodinger Institute Wien, talk titled *Dimensional regularization and renormalization in non commutative quantum field theory.*

September 2nd - 8th, Noncommutative Geometry Workshop, Mathematisches Forschungsinstitut Oberwolfach, talk titled *Renormalization in Non Commutative Quantum Field Theory.*

April 23rd - 27th, Non Commutative Geometry and Physics, Laboratoire de Physique Théorique d'Orsay, talk titled *Exorcizing the Landau ghost in NCQFT.*

2006 **September 4th - 8th, Noncommutative Geometry and Physics: Fundamental Structure of Space and Time,** Isaac Newton Institute for Mathematical Sciences Cambridge, Poster presented *Parametric representation in NCQFT.*

Invited Seminars

2020 **April 22th, The Tensor Journal Club,** online, talk titled *The Wigner semicircle law for tensors.*

2019 **December 4th, Probability Seminar,** Basel University, talk titled *Invitation to random tensors.*

November 29th, Theoretical Physics Seminar, Radboud University, talk titled *Tensor field theory.*

2018 **November 20th, Theoretical Physics Seminar,** Leiden University, talk titled *Invitation to random tensors and tensor field theory.*

November 13th, Theoretical Physics Seminar, Kyoto University, talk titled *Invitation to random tensors and tensor field theory.*

April 18th, Probability Seminar, DMA, ENS, talk titled *Invitation to Random Tensors and tensor field theory.*

February 20th, TH String Theory Seminar, CERN, talk titled *Invitation to Random Tensors.*

January 25th, Quantum Gravity Seminar, APC, Université Paris 7, talk titled *Invitation to Random Tensors.*

2017 **May 25th, Quantum Gravity Seminar,** The Perimeter Institute for Theoretical Physics Waterloo, talk titled *The $\imath\epsilon$ prescription in the SYK model.*

March 9th, Rencontres Théoriciennes, Institut Henri Poincarè, talk titled *Invitation to Random Tensors.*

February 17th, Theoretical Physics Seminar, Princeton University, talk titled *The classification of edge colored Graphs.*

January 25th, Applied Mathematics Seminar, University of East Anglia, talk titled *Invitation to Random Tensors.*

2016 **February 5th, Combinatorics Seminar,** Université de Bordeaux, talk titled *The classification of edge colored graphs.*

2014 **November 18th, Mathematical Physics Seminar,** Bonn University, talk titled *Analyticity results for cumulants of matrix models.*

2013 **December 2nd, Mathematical Physics Seminar,** Chalmers University of Technology Göteborg, talk titled *Random Tensor Models.*

March 25th, GT Combi, Laboratoire d'informatique de l'École Polytechnique Palaiseau, talk titled *Graphes colorés et triangulations en dimension supérieure à deux.*

2012 **November 30th, Journée cartes aléatoires,** Université de Nancy, talk titled *Graphes colorés et triangulations en dimension supérieure à deux.*

February 6th, High Energy Theory Seminar, Institute for Advanced Study Princeton, talk titled *The Large N Limit of Tensor Models.*

2011 **December 7th, Theoretical Physics Seminar,** École normale supérieure Paris, talk titled *(Colored) Tensor Models.*

December 1st, Theoretical Physics Seminar, École normale supérieure Lyon, talk titled *(Colored) Tensor Models.*

Invited Seminars

November 23rd, Theoretical Physics Seminar, Institut des Hautes Études Scientifiques Bures sur Yvette, talk titled *(Colored) Tensor Models.*

November 22nd, Probability Seminar, École normale supérieure Paris, talk titled *Universality for Random Tensors.*

April 26th, International Loop Quantum Gravity Seminar, The Perimeter Institute for Theoretical Physics Waterloo, talk titled *The* $1/N$ *expansion in Colored Tensor Models.*

April 12th, Mathematical Physics Seminar, Laboratoire d'Informatique de Paris Nord, talk titled *The* $1/N$ *expansion in Colored Tensor Models.*

April 5th, Mathematical Physics Seminar, Centre de Physique Théorique École Polytechnique Palaiseau, talk titled *The* $1/N$ *expansion in Colored Tensor Models*

April 4th, Mathematical Physics Seminar, Institut de Physique Theorique Saclay, talk titled *The* $1/N$ *expansion in Colored Tensor Models.*

April 1st, Mathematical Physics Seminar, Institut Camille Jordan Lyon, talk titled *The* $1/N$ *expansion in Colored Tensor Models.*

2010 **April 21st-28th, Mathematical Physics Seminar,** University of Virginia Charlottesville, series of lectures in *Group Field Theory.*

January 27th, THE Journal Club, McGill University Montreal, talk titled *Introduction to Group Field Theory.*

2009 **December 17th, Quantum Gravity Seminar,** Albert Einstein Institut Potsdam-Golm, talk titled *Group Field Theory 101.*

October 21st, Probability Seminar, The University of British Columbia Vancouver, talk titled *Group Field Theory.*

September 29th, Mathematical Physics Seminar, Centre de recherches mathématiques Montreal, talk titled *Group Field Theory.*

March 13th, Mathematical Physics Seminar, Centre de Physique Théorique, École Polytechnique Palaiseau, talk titled *Hunting bubbles in Group Field Theory.*

Postdocs

2021– present	**Carlos I. Perez–Sanchez,** Postdoc

PhD students

2021– present	**Davide Lettera,** PhD student
2018– present	**Sabine Harribey,** PhD student
2013–2017	**Thibault Delepouve,** PhD student (co supervised with V. Rivasseau), thesis titled "Quartic Tensor Models".

Master Students

2021	**Hannes Keppler,** master thesis, Heidelberg University
2017	**Maciej Kolanowski,** master internship completed at Centre de Physique Theorique, Ecole Polytechnique.
2015	**Donald Youmans,** master thesis, title "The Double Scaling Limit of the Multi-orientable Tensor Model", Master in Theoretical Physics, Centre International de Physique Fondamentale, ENS Paris.
2010	**Alessandro Sfondrini,** master thesis, title "Functional Renormalization and Asymptotic Safety", completed at the Perimeter Institute for Theoretical Physics.

Teaching Experience

2021– present	**Professor,** Master in Theoretical Physics, Heidelberg University, "Quantum Field Theory at large N" class.
2012–2016	**Lecturer,** (joint with V. Rivasseau), Master 2 Concepts fondamentaux de la physique, "Advanced Quantum Field Theory" class.
2019	**Lecturer,** University of Lyon, short school "JPMLyon 2019: Random tensors and SYK models"
2014	**Lecturer,** Erwin Schrodinger Institute, summer school "Combinatorics, Geometry, and Physics"
2010	**Lecturer,** The Perimeter Institute for Theoretical Physics, series of graduate lectures "Introduction to renormalization"
2005–2008	**Teaching Assistant,** Université Paris 6, 2nd year undergraduate course, "Mathematics for physicists".

Scientific Evaluation

2020	**Expert evaluator**	Mega Grants, Russian Federation
2019	**Expert evaluator**	Innovational Research Incentives Scheme Holland (NWO)
2017	**Expert evaluator**	Swiss National Science Foundation (SNSF)
	Expert evaluator	Natural Sciences and Engineering Research Council of Canada (NSERC)
2016	**Expert evaluator**	German Research Foundation (DFG)
2015	**Expert evaluator**	French National Research Agency (ANR)
2014	**Expert evaluator**	Swiss National Science Foundation (SNSF)
2013	**Expert evaluator**	Austrian Science Fund (FWF)
2011	**Expert evaluator**	Banff International Research Station (BIRS)

Editorial activity

2017–present	**Member of the editorial board,** "*Symmetry, Integrability and Geometry: Methods and Applications (SIGMA)*"
2016	**Editor,** "*Special Issue on Tensor Models, Formalism and Applications,*" Symmetry, Integrability and Geometry: Methods and Applications (SIGMA), 2016

Organization Experience

2013–2014	**Quantum Gravity in Paris,** conference series organizer, CPHT
2010–2011	**The Quantum Gravity Seminar,** organizer, The Perimeter Institute for Theoretical Physics
2009	**November 5th - 8th, Asymptotic Safety - 30 Years Later,** organizer, Perimeter Institute
2009	**The Quantum Gravity group meeting,** organizer, The Perimeter Institute for Theoretical Physics

Other funding

2015	**ERC Starting grant** interview stage, panel PE1
2013	**PEPS** member of the "Cartes3D" program, amount 7000 €.

Fellowships

2005–2008 **Allocation Normalien Moniteur,** 3 years dissertation funding

2002–2005 **École Normale Supérieure de Paris,** "Selection Inernationalle" scholarship

Research Internships

2004 **The Ohio State University,** "The status of singularities in string theory: The D1D5 and F1P systems"

Institute Astronomique de Paris, "Modification of the speed of light due to non minimal coupling between gravity and electromagnetism."

2003 **Laboratoire Kastler Brossel,** "Experience avec des atomes froides"

Languages

English (proficient), French(proficient), German (beginner), Romanian (mother tongue).