Edouard Daviaud

Curriculum Vitae

Nationality: French
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Liège Université

Current position

Since October 2024 — **Post-doc at Liège Université**, *supervised by C. Esser*, W.B.I. grant

August 2023 - August 2024 — **Post-doc at the Chinese University of Hong-Kong**, *supervised by D.J. Feng*

September 2021 - June 2023 — **PHD Thesis and ATER position in Université Paris-Est Créteil**, *PhD defended the 7th June 2023, French universities do not deliver mentions*

October 2018 – September 2021 — **PHD Thesis**, *Advisers: J.Barral and S.Seuret*, Metric theory of approximation and geometry of self-similar discrete measures

Academic training

2016 – 2018 — **Master 2 in pure Mathematics**, Université Pierre et Marie Curie

2015 – 2016 — **Laureat of French math agregation (ranking: 88)**, *Université Paris-Sud*

2014 – 2015 — **Year off**

2013 – 2014 — **Master 2 in Mathematics teaching**, *Université Paris-Sud*, Paris

2012 – 2013 — **Master 1 in pure Mathematics and second year of Magister**, *Université Paris-sud*

2011 – 2012 — **Third year of License in pure Mathematics**, *Université Paris-Sud*

2008 – 2011 — **CPGE MPSI-MP**, *Lycée Jacques Decour*

Past research experience

2017-2018 — **Research internship**, *Advisor : S.Seuret*, Université Paris-Est Créteil, *Ubiquity, mass transference principle and some applications*

2013-2014 — **Research internship**, *Advisor : N.Thierry*, Université Paris-Sud, *Random walk on R-trivial monoïds*

2012-2013 — **Research internship**, *Advisor : L.Moonens*, Université Paris-Sud, *Quasi-measure Theory*

2011-2012 — **Research internship**, *Advisor : D.Harrari*, Université Paris-Sud, *Structure of pro-finite abelian groups*

Research topics

Geometric measure theory and fractal geometry

Multifractal analysis

Diophantine approximation

Ergodic theory

Publications

Published in peer reviewed journals

2025 — **Hausdorff dimension of dynamical Diophantine approximation associated with ergodic mixing systems**, *Advances in Mathematics, Volume 482, Part B, 110621, 43 pp.*

2025 — **A dimensional mass transference principle for Borel probability measures and applications**, *Advances in Mathematics, Volume 474, 110304, 47 pp.*

2025 — **Dynamical Diophantine approximation and shrinking targets asscociated with C1 weakly conformal IFS's with overlaps**, *Ergodic Theory and Dynamical Systems, Volume 45 , Issue 6, pp. 1777 - 1826, 50 pp.*

2024 **A survey of recent extensions and generalisations of the Mass Transference Principle**, *with D.Allen*, Recent Developments in Fractals and Related Fields 4, 30 pp.

2024 **An upper-bound for the Hausdorff dimension of limsup sets**, *Real Anal. Exchange 49(2): 259-292, 34 pp.*

2024 **A dimensional mass transference principle from ball to rectangles for projections of Gibbs measures and applications**, *Journal of Mathematical Analysis and Applications, Volume 538, Issue 1, 128386, 28 pp.*

Preprint submitted

2025 **Random covering by rectangles on self-similar carpets**, *arXiv:2510.04879v2*

2025 **Slow polynomial mixing, dynamical Borel-Cantelli lemma and Hausdorff dimension of dynamical diophantine sets**, *arXiv:2505.21464v2*

2025 **Limsup sets of full finite measure and covering property**, *arXiv:2204.01304*

Final phase of redaction

2026 **Multifractal analysis of discrete self-similar measures satisfying AWSC**

2026 **Intrinsic Diophantine approximation and results on Mahler's problem**

2026 **Shrinking targets on self-similar sets with large overlaps**

2026 **Exact bivariate multifractal spectrum of RLWS**, *with C. Esser*

Selection representative publications

2026 **Intrinsic Diophantine approximation and results on Mahler's problem**, *availaible on arxiv in February*

2025 **Hausdorff dimension of dynamical Diophantine approximation associated with ergodic mixing systems**, *Advances in Mathematics, Volume 482, Part B, 110621, 43 pp.*

2025 **A dimensional mass transference principle for Borel probability measures and applications**, *Advances in Mathematics, Volume 474, 110304, 47 pp.*

2025 **Slow polynomial mixing, dynamical Borel-Cantelli lemma and Hausdorff dimension of dynamical diophantine sets**, *arXiv:2505.21464v2*

2025 **Random covering by rectangles on self-similar carpets**, *arXiv:2510.04879v2*

2025 **Dynamical Diophantine approximation and shrinking targets asscociated with C1 weakly conformal IFS's with overlaps**, *Ergodic Theory and Dynamical Systems, Volume 45 , Issue 6, pp. 1777 - 1826, 50 pp.*

Ongoing projects

2026 **RLWS on self-similar fractals**, *with B. Vedel (Vannes) and C. Esser (Liège)*

2026 **Intersection with set with prescribed irrationality exponent and translated of these sets**, *with K. Song (Changsha) and Q. Zhang (Marne la Vallée)*

2026 **Diophantine approximation by multi-dimensional rotations**, *with H. Yu (Warwick)*

2026 **Rectangular shrinking target on self-similar sets**, *with D. Allen (Exeter), T. Jordan (Bristol), B. Ward (York) and C. Wilson (Bristol)*

Given talks

Seminars, conferences and workshop

2025 **SCAM**, *Créteil, France*, Intrinsic rational approximation

2025 **Ergodic theory and dynamical systems seminar**, *Orléans, France*, Intrinsic rational approximation

2025 **Ergodic theory and dynamical systems seminar**, *Warwick, England*, Hausdorff dimension of dynamical coverings associated with ergodic mixing systems

2025 **Deuxièmes journées de l'axe Analyse Multifractale et Applications**, *Agay, France*, Hausdorff dimension of dynamical coverings associated with ergodic mixing systems

2025 **Premières journées de l'axe Analyse Fonctionnelle, Harmonique et Probabilités Ecole d'automne d'ANAIS 2025-Programme**, *Vannes, France*, Random covering by rectangles on self-similar carpets

2025 **Diophantine approximation and related fields**, *York, England*, Hausdorff dimension of dynamical coverings associated with ergodic mixing systems

2025 **Functional analysis day**, *Mons, Belgium*, Hausdorff dimension of dynamical coverings associated with ergodic mixing systems

2025 **Functional analysis seminar**, *Lille, France*, Dynamical approximation by orbits of dynamical systems

2025 **Aléatoires et fractals**, *Vannes, France*, Dynamical approximation by orbits of dynamical systems

2025 **LMBA seminar**, *Vannes, France*, Dynamical approximation by orbits of dynamical systems

2024 **Wuhan university**, *China*, Dynamical approximation by orbits of dynamical systems

2024 **Changsha normal university**, *China*, Dynamical approximation by orbits of dynamical systems

2024 **Diophantine Approximation, Fractal Geometry and Related topics**, *Marne la Vallée*, A certain type of approximation by polynomials with algebraic coefficients

2023 **Online Seminar in Diophantine Approximation and Related Topics**, Approximation by rectangles on (non necessary product) missing digit sets

2023 **Multifractal analysis and self-similarity**, *CIRM, France*, Mass transference principle for inhomogeneous measures

2023 **Seminar COOL**, *France*, Diophantine approximation on fractals

2023 **One World Fractal**, *online*, Diophantine approximation on fractals

2023 **Seminar COOL**, *France*, Diophantine approximation on fractals

2022 **Fractal and related fields**, *Porquerolles island*, France, Dimension of weakly conformal shrinking targets with overlaps

2022 **Seminaire Cristolien d'Analyse Multifractale**, *Université Paris-Est Créteil*, France
Inhomoheneous mass transference principles and approximation by open sets

2020 **PHD seminar**, *Université Paris-Est Créteil*, France, Seminar
Ubiquity Theorems and partial results on Mahler's conjecture

2019 **Journée du GDR 2019**, *Vielsam*, Belgique
Inhomoheneous ubiquity Theorem for anisotripic contractions of balls

2018 **PHD seminar**, *Université Paris-Est Créteil*, France
Ubiquity Theorems

2018 Animation of a workshop about the article of M.Hochman, On self-similar sets with overlaps and inverse theorems for entropy, Annals of Mathematics 180 (2014), no. 2, 773 – 822, *Université Paris-est Créteil*

Upcoming talks

2026 **Simons Semester: Continued Fractions, Fractals, Ergodic theory and Dynamics**, *Bedlewo, Poland*
Mini-course lecturer: Mass transference principle for finite measures, application to intrinsic Diophantine approximation (4 to 6 hours)

2026 **Ergodic theory and dynamical system's seminar**, *Sorbonne Paris-Nord, France*
Intrinsic Diophantine approximation

2026 **Exeter's seminar**, *Exeter, England*
Intrinsic Diophantine approximation

Event organized

2021 **Journée du GDR 2021**, *Porquerolles*, France, 4 day, 45 participants

Sicne 2024 **Seminar of the analysis and probability teams in Liège (PASTIS)**, Belgium, about onece every three weeks

Teaching Experience

Teaching in 2025-2026, Liège University (30 h)

Topology, *Master 1, Mathematics (Exercise sessions)*

Teaching in 2024-2025, Liège University (50 h)

Probablity , *Second year, Computer-Sciences (Exercise sessions)*

Functional Analysis , *Functional Analysis, Master 1 Mathematics (Exercise sessions)*

Teaching in 2023-2024, Chinese university of Hong-Kong (40 h)

Topics in analysis II: Geometric measure theory and metric number theory , *post-graduated students (Lecture course)*

Teaching in 2022-2023, Université Paris-Est Créteil (193h30)

Arithmetic and groundings, *First year Mathematics (Lecture course and exercise sessions)*

Vectorial analysis, *Second year Physics (Lecture course)*

Calculus, *First year Engineering science (Exercise sessions)*

Probability, *Second year Engineering science and Physics (Exercise sessions)*

Teaching in 2021-2022, Université Paris-Est Créteil (192h)

Calculus 2, *First year Engineering science (Exercise sessions)*

Function of complex variable and transform, *Second year Engineering science (Exercise sessions)*

Euclidean spaces, *Second year Physics (Lecture course)*

Arithmetic and groundings , *First year Mathematics-Physics and First year Mathematics-Computer-sciences (Lecture course and exercise sessions)*

Teaching in 2020-2021, Université Paris-Est Créteil (64h)

Function of complex variable and transform, *Second year Engineering science (Exercise sessions)*

Mathematical tools, *First year Biology (Exercise sessions)*

Teaching in 2019-2020, Université Paris-Est Créteil (64h)

Probability, *Second year Computer science (Exercise sessions)*

Arithmetic and groundings , *First year Mathematics (Exercise sessions and lecture course)*

Teaching in 2018-2019, Université Paris-Est Créteil (30h)

Analysis 1, *First year Mathematics (Exercise sessions)*

Mathematics for the Physic 3, *Second year Physics (Exercise sessions)*

Teaching in 2017-2018, Université d'Evry (96h)

Mathematics 2 (Optimization and linear algebra), *First year Economical sciences (Exercise sessions)*

Mathematical Language, *First year Mathematics (Lecture course and exercise sessions)*

Analysis 2, *First year Mathematics (Exercise sessions)*

Master theses and research projects supervision

2025-2026 **Master 2 research project**, *Multifractal analysis of self-affine measures on Bedford-McMullen carpets, Endymion Piett*

2025-2026 **Master thesis**, *Multifractal environnement and the Frish-Parisi conjecture, Endymion Piett, co-supervised with C. Esser*

2024-2025 **Master 2 research project**, *Constructing hypercyclic vectors using random methods, Hugo Bertrand, co-supervised with C. Esser*

Other teaching related experiences

2025 **examination board member for the Ecoles normales supérieures ENSAI entrance examination**

2016-2018 **Khôlles in BL Mathematics, Philosophy, History and Languages**, *at Lycée Henri IV*

2016-2017 **Khôlles in BCPST Mathematics and Biology**, *at ENCPB*

2011-2013 **Khôlles in Math. sup. Mathematics and Physics**, *at Lycée Jacques Decour*

Service to the community as reviewer

Journal of fractal geometry

Analysis and PDE

Nonlinearity

Journal of Fourier analysis and applications

Attended international conferences (as a non speaker)

2023 **Conference in the memory of Ka-Sing Lau**, *Hong-Kong*, China

2021 **Journée du GDR 2021**, *Porquerolles*, France

2021 **One world fractals**, *online*

2021 **Conference in the honor of J.Schmeling's 60th birthday: New frontiers in dimension theory of dynamical systems - applications in metric number theory**, *online*

2019 **Journée du GDR 2019**, *Vielsam*, Belgique

2019 **Number Theory and Dynamics**, *Cambridge*, United Kingdom

2019 **Thermodynamic Formalism : Modern Techniques in Smooth Ergodic Theory**, *summer school*, CIRM

Spoken Languages

- French - Native speaker
- English - professional

Hobbies

- Cooking
- Chess
- Street theater and Performance
- Guitar