

# Curriculum Vitae

## Identification.

Benoît Saussol, born january 2th 1973. French nationality.  
Full professor (PRex) at Aix-Marseille University.  
Institut de Mathématiques de Marseille, CNRS, Marseille  
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## Career.

### *Positions.*

Doctorate, Université de Toulon et du Var and CPT Marseille 1995–1998  
Postdoc, Instituto Superior Tecnico, Lisbonne, Portugal 1998–2000  
Maître de conférence, Université de Picardie Jules Verne (UPJV), Amiens, 2000–2005  
Professeur des Universités, Université de Bretagne Occidentale (UBO), Brest, 2005–2021  
Professeur des Universités, Aix Marseille Université, 2021-present

### *Diploma.*

Doctorat (PhD) en Mathématiques, Université de Toulon, 1998 (Dir. S. Vaienti)  
Habilitation à diriger des recherches, Université de Picardie, 2003

## Responsabilities, collective duties.

### *Administration.*

- Vice director of the mathematics departement, 2024-present
- Director of the Laboratory LMBA (CNRS-Université de Bretagne Occidentale-Université de Bretagne Sud, UMR 6205, Brest and Vannes, 60 permanents), 2013/08–2018/12.
- Member of the math departement council at UBO.
- Member of the scientific comitee of Labex CHL.
- Co-director of Institut Brestois du Numérique et des Mathématiques (IBNM)
- Local coordinator for the ANR Project PERTUBATIONS 2011-2015 (local budget 50k euros).
- Responsible for the Master in Mathematics at the University of Brest.
- Member of the evaluation board of Laboratoire de Probabilités et Modèles Aléatoires (LPMA), Paris 6-7, 2012.

### *Referee for journals.*

Annales de l'Institut Fourier, Ergodic Theory and Dynamical Systems, Journal of the London Mathematical Society, Nonlinearity, Annales de l'École Normale Supérieure de Pise, Proceedings of the American Mathematical Society, Journal of Statistical Physics, Communications in Mathematical Physics, Journal of mathematical analysis and applications, Stochastic and Dynamics, Physica D ; Advances in mathematics, few reports in *Mathematical Reviews*.

## Postgraduate.

- Director of the thesis of Jérôme Rousseau, Brest 2007-2010. Now holds a permanent position at UFBA, Salvador de Bahia, Brazil.
- Co-director with Françoise Pène of the thesis of Nasab Yassine, Brest 2015-2018. Position in Vannes, University of south Brittany.
- Co-director with Jérôme Rousseau of the thesis of Adriana Coutinho, Brest and Salvador de Bahia 2016-2019. Now holds a position at IST Libreville, Gabon.
- Co-director with Pierre Ailliot of the thesis of Marie Boutigny (CIFRE Eau du Ponant), Brest 2018-2021.
- Director of the thesis of Arthur Boos, Marseille 2021-2025. Defense in June 2025.
- Member of the defense committee of 8 PhD thesis in France, Brazil and Portugal. Member of the defense committee of 5 Habilitation à diriger des recherches (HDR) in France and Portugal.

## Publications.

- [1] (with C. Liverani, S. Vaienti) Conformal measure and decay of correlations for piecewise monotonic transformations, *Ergodic Theory and Dynamical Systems* 18 (1998) 1399-1420.
- [2] (with C. Liverani, S. Vaienti) A probabilistic approach to intermittency, *Ergodic Theory and Dynamical Systems* 19 (1999) 671-685.
- [3] (with V. Penne, S. Vaienti) Dimensions for recurrence times : topological and dynamical properties, *Discrete and Continuous Dynamical Systems* 5 (1999) 783-798.
- [4] (with M. Hirata, S. Vaienti) Statistics of return times : a general framework and new applications, *Communication in Mathematical Physics* 206 (1999) 33-55.
- [5] Absolutely continuous invariant measures for multidimensional expanding maps, *Israel Journal of Mathematics* 116 (2000) 223-248.
- [6] (with L. Barreira) Multifractal analysis of hyperbolic flows, *Communications in Mathematical Physics* 214 (2000) 339-371.
- [7] (with L. Barreira) Variational principles and mixed multifractal spectra, *Transactions of the American Mathematical Society* 353 (2001) 3919-3944.
- [8] On fluctuations and the exponential statistics of return times, *Nonlinearity* 14 (2001) 179-191.
- [9] (with L. Barreira) Hausdorff dimension of measures via Poincaré recurrence, *Communication in Mathematical Physics* 219 (2001) 443-463.
- [10] (with J.-R. Chazottes) On pointwise dimensions and spectra of measures, *C. R. Acad. Sci. Paris Ser I Math.* 333 (2001) 719-723.
- [11] (with L. Barreira, J. Schmeling) Higher dimensional multifractal analysis, *Journal de Mathématiques pures et appliquées* 81 (2002) 67-91.
- [12] (with L. Barreira) Product structure of Poincaré recurrence, *Ergodic Theory and Dynamical Systems* 22 (2002) 33-61.
- [13] (with S. Troubetzkoy, S. Vaienti) Recurrence, dimensions and Lyapunov exponents, *Journal of Statistical Physics* 106 (2002) 623-634.
- [14] (with L. Barreira et J. Schmeling) Distribution of frequencies of digits via multifractal analysis, *Journal of Number Theory* 97 (2002) 413-442.
- [15] (with L. Barreira) Variational principles for hyperbolic flows, *Fields Institute Communications* 31 (2002) 43-63.
- [16] (with H. Bruin, S. Troubetzkoy, S. Vaienti) Statistics of return time via inducing, *Ergodic Theory and Dynamical Systems* 23 (2003) 991-1013.
- [17] (with V. Afraimovich, J.-R. Chazottes) Pointwise dimensions for Poincaré recurrence associated with maps and special flows, *Discrete and Continuous Dynamical Systems A* 9 (2003) 263-280.
- [18] (with J.F. Alves, V. Araujo) On the uniform hyperbolicity of certain hyperbolic systems, *Proceedings of the American Mathematical Society* 131 (2003) 1303-1309.
- [19] (with S. Vaienti, S. Troubetzkoy) Recurrence and Lyapunov exponents, *Moscow Mathematical Journal* 3 (2003) 189-203.
- [20] (with J. Wu) Recurrence spectrum in smooth dynamical system, *Nonlinearity* 16 (2003) 1991-2001.
- [21] (with A.-H. Fan, J. Schmeling) Products of non-stationary random matrices and Multiperiodic equations of several scaling factors, *Pacific Journal of Mathematics* 214 (2004) 31-54.
- [22] Recurrence rate in rapidly mixing dynamical systems, *Discrete and Continuous Dynamical Systems A* 15 (2006) 259-267.
- [23] (with R. Leplaideur) Large deviations for return times in non-rectangle sets for Axiom A diffeomorphisms, *Discrete and Continuous Dynamical Systems A* 22 (2008) 327-344.
- [24] (with F. Pène) Quantitative recurrence in two dimensional extended processes, *Ann. Inst. H. Poincaré proba-stat* 45-4 (2009) 1065-1084.
- [25] (with J. Rousseau) Poincaré recurrence for observations, *Transactions A.M.S.* 362-11 (2010) 5845-5859.
- [26] (with F. Pène) Back to balls in billiards, *Communications in mathematical physics* 293-3 (2010) 837-866.
- [27] An introduction to quantitative Poincaré recurrence in dynamical systems, *Reviews in Mathematical Physics* 21-8 (2009) 949-979.
- [28] (with R. Leplaideur) Central limit theorem for dimension of Gibbs measures for skew expanding maps, *Stochastics and Dynamics* 12-2 (2012) 1150019, 24pp.

- [29] (with M. Abadi) Hitting and returning into rare events for all alpha-mixing processes, *Stochastic processes and their applications* 121 (2011) 314-323.
- [30] (with F. Pène, R. Zweimüller) Recurrence rates and hitting-time distributions for random walks on the line, *Annals of Probability*, 41 (2013) 619-635.
- [31] (with J. Rousseau, P. Varandas) Exponential law for random subshift of finite type, *Stochastic processes and their applications* 124 (2014) 3260-3276.
- [32] (with S. Galatolo, J. Rousseau) Skew products, quantitative recurrence, shrinking targets and decay of correlations, *Ergodic Theory and Dynamical Systems* 35 (2015), no. 6, 1814-1845.
- [33] (with F. Pène, R. Zweimüller) Return- and hitting-time limits for rare events of null-recurrent markov maps. *Ergodic Theory Dynam. Systems* 37 (2017), no. 1, 244-276.
- [34] (with F. Pène) Poisson law for some nonuniformly hyperbolic dynamical systems with polynomial rate of mixing. *Ergodic Theory Dynam. Systems* 36 (2016), no. 8, 2602-2626.
- [35] (with M. Abadi) Almost sure convergence of the clumping factor in alpha-mixing processes, *Stoch. Dyn.* 16 (2016), no. 3, 1660016, 11 pp.
- [36] (with W. Bahsoun) Linear response in the intermittent family: differentiation in a weighted C0-norm, *Discrete Contin. Dyn. Syst.* 36 (2016), no. 12, 6657-6668.
- [37] (with A. Coutinho, J. Rousseau) Large deviations for return times ; *Nonlinearity*, v. 31, p. 5162-5179, 2018.
- [38] (with S. Galatolo, I. Nisoli) An elementary way to rigorously estimate convergence to equilibrium and escape rates, *J. Comput. Dyn.* 2 (2015), no. 1, 51-64.
- [39] (with W. Bahsoun, M. Ruziboev), Linear response for random dynamical systems, *Advances in Mathematics*, vol. 364 (2020) 107011, 44p.
- [40] (with F. Pène) Spatio-temporal Poisson processes for visits to small sets, *Israel Journal of Mathematics*, Volume 240, issue 2, October 2020, 625–665.
- [41] (with F. Pène) Application of the convergence of the spatio-temporal processes for visits to small sets, *Lecture notes, Springer, CIRM Jean-Morlet Chair Subseries* (2020), 23p.
- [42] (with H. Crimmins) Quenched Poisson processes for random subshifts of finite type, *Nonlinearity* 35 (2022).
- [43] (with M. Boutigny, P. Ailliot, A. Chaubet, P. Naveau) A meta-Gaussian distribution for sub-hourly rainfall *Stochastic Environmental Research and Risk Assessment* 37 (10), 3915-3927
- [44] (with T. Caby, M. Gianfelice, S. Vaienti) Topological synchronisation or a simple attractor? *Nonlinearity* 36 (2023) 3603
- [45] (with F. Pène) Quantitative recurrence for  $T, T^{-1}$  transformations, *Probability Theory and Related Fields*, 1-38

## Talks in Conferences.

- Workshop Statistical properties of dynamical systems, Budapest, 2024
- Workshop Rare events in dynamical systems, Vienne, 2024
- Workshop Probabilistic methods in dynamics, Porto, 2023
- Workshop Probabilistic methods in dynamics, Pise, 2023
- Thermodynamic formalism: Dynamical systems, Statistical Properties and their Applications, CIRM, 2019
- Distribution des événements extrêmes et application à la climatologie, Saclay, 2019
- Workshop on Linear Response Theory, IHP, Paris, 2019
- Dynamical systems and beyond, Pise, 2019
- Probabilistic limit theorems for dynamical systems, CIRM 2018
- Dynamic Days Europe, Loughborough, UK. 2018
- Mixing Flows and Averaging Methods, ESI Vienna. 2016
- Dynamical systems, Differential equations and applications, Orlando, 2016
- Statistical Properties of Dynamical Systems, Porto, 2016
- Fractals and Related Fields III, Porquerolles, 2015
- Rare & extreme, Aber Wrac'h, 2014
- Extreme value theory and law of rare events, CIRM, 2014
- Differentiable Ergodic Theory, Dimension Theory and Stable Foliations, Oberwolfach, 2014
- Workshop Des martingales aux systèmes dynamiques, Paris, 2014

- Hyperbolicity and dimensions, CIRM, 2013
- Workshop Limit theorems in dynamical systems, Lausanne, 2013
- Ergodic Theory and Dynamical Systems: Perspectives and Prospects, Warwick, 2012
- Partial Hyperbolicity at UFRJ, Rio de Janeiro, 2011
- Large deviations in dynamical systems, CIRM, 2011
- Rencontre ANR Perturbations, Brest, 2011
- International conference on dynamical systems Jacob Palis 70, Buzios, 2011