Olivier RAMARÉ
CNRS / Institut de Mathématiques de Marseille
Aix Marseille Université, U.M.R. 7373
Site Sud, Campus de Luminy, Case 907
13288 Marseille Cedex 9

Email : olivier.ramare@univ-amu.fr
Personal site : https://ramare-olivier.github.io/
58 years old,
French nationality,
ORCID: 0000-0002-8765-0465

CNRS Researcher in Mathematics

Diplomas

June 2003 Habilitation à diriger des recherches, *University of Lille 1*,
Jury: M. Balazard, H. Daboussi, J.-M. Deshouillers, A. Granville, H. Iwaniec, H. Queffélec
January 1991 PhD *Bordeaux 1*, *"Contribution au problème de Goldbach"* with J.-M. Deshouillers,
June 1989 M.Phil. in mathematics, *Bordeaux 1*,
June 1988 Agrégation de mathématiques, option informatique.

Positions held

Oct 2019 - now Senior Researcher, CNRS, Aix Marseille Université
Nov 2018 - Sep 2019 Higher Researcher, CNRS, Aix Marseille Université
June 2016 - Nov 2018 Researcher 1st class, CNRS, Aix Marseille Université
Oct 1996 - May 2016 Researcher 1st class, CNRS, University of Lille 1
Oct 1992 - Oct 1996 Researcher 2nd class, CNRS, University of Nancy 1
Sep 1992 - Sep 1993 Visitor at the Institute for Advanced Studies, *Princeton*
Sep 1989 - Sep 1992 Allocataire Moniteur Normalien, *Université Bordeaux 1*
Sep 1985 - Sep 1989 Student at the ENS (Higher Normal School) of Saint-Cloud

Some selected activities

Head of the SMF publishing house june 2010 / june 2013, deputy-president of the SMF (French Mathematical Society) june 2010 / june 2012, vice-director june 2009 / june 2010. These very demanding positions require in particular to oversee at least weekly the workflow of twelve journals/book series and to balance the workload, to help editorial committees with difficult situations, to set prices, organize sales and to coordinate the full publication process, from refeering to dispatching and advertising.

Member of the ANR scientific evaluation committee Mathematics/Theoretical Comp. Science in 2014, 2015, 2020 and 2021, and mid-term evaluation committee in 2017.

Member of the Cneser 2003/2005, main and disciplinary sections.

Deputy-director of the Archimedes Institute, between Mathematics and Computer Science, June 2020 / June 2023.

Scientific Officer for CIMPA, February 2024 / now.

Organizer of the working group and of the seminar of number theory in Nancy 93/96, co-organizer of the working group/seminar TANyAH in Lille 1998/2015, and TAPAS in Marseille from 2016 onwards. TANyAH has been the theater of more than 250 lectures. The list of lecturers includes R. Balasubramanian, J. Cilleruelo, B. Green, H. Iwaniec, J-M. De Koninck, K. Matsumoto, J-C. Schlage-Puchta... This platform helped train several students.

Thesis advisor for H. Kadiri 1999–2002, A. Saldana 2006–2009, D. Berkane 2009–2012, S. Saad Eddin 2009–2013, R. Vanlalngaia 2014–2015, F. Daval 2014–2018, S. Saad Eddin (Diplôme Supérieur de Recherches) 2013–2015, N. Debouzy 2015–2018, M. H. Betah 2015–2018

Member of the Editorial Board of the *IMSc Lecture Notes series*, from 2012 onwards, of *the North-Western European Journal of Mathematics*, from 2014 onwards, of *N'Autre Ecole / Question de Classe(s)*, from 2012 onwards, of *Notes on Number Theory and Discrete Mathematics* and of *The Ramanujan Journal*, from 2023 onwards. I wrote both public and work-flow side of the NWEJM website.

Co-organizer of the Number Theory Year (Chennai, India): fourteen one-month courses at IMSc from sep. 2010 to june 2012, more than 20 lecturers, a couple hundred hours of lectures now online covering Transcendental Number Theory, Diophantine Geometry, Analytic Number Theory, Additive Combinatorics and Modular Forms.

Co-organizer of international conf.: (Lille) 1997, 2001, 2008, 2009, (Warszawa) 2017 and (Paris) 2019.

Member of the selection and hiring committee of Lille 1 from 1998 to 2010, of Clermont-Ferrand 2020, head of such a committee in Marseille 2021, 2022 and 2023.

Member of PhD/Habilitation juries 1998, 2006, 2009, 2010, 2013-2022 (France), 2013 (Switzerland), 2016 (Australia), 2018 (Canada), 2019 and 2023 (India). Head of three of them.

Member of library committee in Nancy, Lille and Marseille and CIRM, represent. at the uni. library, 1993–2016; member of the RNBM and speaker at several roundtables on scientific publications.

Member of diverse committees: IT (head of in Lille), internship, doctoral, prospective, steer. MathPhdInFrance...

• Research Papers

Sieve Theory:

On Šnirel'man's constant, Ann. scuola sup. di Pisa 21 (1995) p. 645–705.

Additive properties of dense subsets of sifted sequences, with I. Z. Ruzsa, J. T. N. Bordeaux 13 (2001), p. 559–581.

Eigenvalues in the large sieve inequality, Funct. Approx. 37 (2007), p. 7–35.

Improving on the Brun-Titchmarsh Theorem, with J.-C. Schlage-Puchta, Acta Arith. 131 (2007), p. 351–366.

Eigenvalues in the large sieve inequality, II, J. T. N. Bordeaux 22 (2010), p. 181–196.

On Bombieri asymptotic sieve, J. Number Theory 130 (2010), p. 1155–1189.

On long κ-tuples with few prime factors, Proc. Lond. Math. Soc. 104 (2012), p. 158-196.

Additive Energy of Dense Sets of Primes and Monochromatic Sums, with D.S. Ramana, Israel J. of Mathematics 199 (2014), p. 955–974.

Additive prop. of dense subsets of sifted sequences, Bull. Lond. Math. Soc. 45 (2013), p. 677–682.

Monochromatic sums of squares, With G. Prakash & D.S Ramana, Math. Zeit. 289 (2018), p. 51–69.

Modular Ternary Additive Problems with Irregular or Prime Number, With G. Kasi Viswanadham, Proc. Steklov Inst. 314 (2021), p. 211–247.

Notes on restriction theory in the primes, Israel Journal of Math. (2023) 21pp.

Exponential sums over primes with multiplicative coeff., With G. Kasi Viswanadham, Math. Zeit. (2023), 21 pp.

Explicit estimates on primes or on Moebius function:

Explicit bounds on exponential sums and the scarcity of squarefree binomial coefficients, with A.Granville, Matematika 43 (1996) p. 73–107.

Sur un théorème de Mertens, Manuscripta Math. 108 (2002), p. 495–513.

Short effective intervals containing primes, with Y. Saouter J. Number Theory 98 (2003), p. 10–33.

Explicit est. for the summatory fct of $\frac{\Lambda(n)}{n}$ from the one of $\Lambda(n)$, Acta Arith. 159 (2013), p. 113–122.

Elementary expl. bounds for two mollifications of Moebius fct, Funct. Approx. 49 (2013), p. 229–240.

From explicit est. for the primes to explicit est. for Moebius fct, Acta Arith. 157 (2013), p. 365–379.

Expl. est. on summatory fct of Moebius fct with coprim. restrictions, Acta Arith. 165 (2014), p.1–10.

Explicit estimates on several summatory fct involving Moebius fct, Math. Comp. 84 (2015), p. 1359-1387.

Explicit estimates: from $\Lambda(n)$ to $\Lambda(n)/n$ in arithmetic progressions, with D. Platt, 2015, 15 pp, Exp. Math.

Chowla's conjecture: from the Liouville fct to the Moebius fct, Lecture Notes 2213 (2018), p. 317–323.

On the missing Log-factor, Lecture Notes 2213 (2018), p. 293–315.

Quantitative Steps in Axer-Landau Equivalence Theorem, Acta Arith. 187 (2019), p. 293–315.

Explicit Average Orders: News and Problems, Proc. of N.Th. Week 2017, Banach Pub. 118 (2019), pages 153–179.

L-series / primes in arithmetic progressions:

Primes in arithmetic progressions, with R.Rumely, Math. Comp. 65 (1996) p. 397–425.

Approximate Formulae for $L(1,\chi)$, Acta Arith. 100 (2001), p. 245–266.

Approximate Formulae for $L(1,\chi)$, II, Acta Arith. 112 (2004), p. 141–149.

A purely analytical lower bound for $L(1,\chi)$, Annales Mathématiques Blaise Pascal 16 (2009), p. 259–265.

Comparing $L(s,\chi)$ with its truncated Euler product and gen., Funct. Approx. 42 (2010), p. 145–151.

An explicit density estimate for Dirichlet L-series, Math. Comp. 85 (2016), p. 325-356.

Products of primes in AP and parity breaking, with A. Walker, J. T. N. Bordeaux (2016) p. 219–225.

Products of primes in AP, with Priyamvad Srivastav, App. by O. Serra, IJNT 16 (2020), p. 747–766.

Fast multi-prec. comp. of some Euler products, with S. Ettahri & L. Surel, Math. Comp. 90 (2021), p. 2247–2265.

Sage Library: Computing Lattice Invariant Euler Products, (2020), 533 lines.

Accurate Computations of Euler Products over Primes in AP, Functiones et Appr. 61 (2021), p. 33–45.

Products of three primes in large AP, with R. Balasubramanian & P. Srivastav, IJNT 19 (2023), p. 843-857.

Explicit bound for product of primes in AP, with R. Balasubramanian & P. Srivastav, Math. Comp. 92 (2023), p. 281–2411.

Explicit upper bound for $L(1,\chi)$ for χ quadratic, with D. Johnston & T. Trudgian, Research in N.T. (2023), 17 pp.

Arithmetic of integer matrices:

Average orders of mult. arithmetic fcts of int. matrices, with G. Bhowmik, Acta Arith. 66 (1994) p. 45–62.

A Turán-Kubilius inequality for integer matrices, with G. Bhowmik, J. Number Theory 73 (1998) p. 59–71.

Algebra of matrix arithmetic, with G. Bhowmik, J. of Algebra 210 (1998) p. 194–215.

Rationality of the zeta fct of subgroups of abelian p-groups, Pub. Math. Debrecen 90 (2017), p. 91–105.

Harmonic analyis / discrepancy:

Almost periodicity of some error terms in prime number theory, with J. Kaczorowski, Acta Arith. 106 (2003), p. 277–297.

Analyse de Fourier des fractions continues à quotients restreints, with M. Queffelec, Ens. Math. 49 (2003), p. 335–356.

Fibonacci nbrs and trigo. identities, with N. Garnier, Fibonacci Quat. 46/47 (2008), p. 56–61.

Geometry of spaces of functions with prime frequency, with P. Lefèvre and E. Matheron, Acta Math. Hung. 143 (2014), p. 75–80.

Tauberian Oscillation Theorems & Distribution of Goldbach Numbers, with G. Bhowmik and J.-C. Schlage-Puchta, J.T.N. Bordeaux 28 (2016), p. 291–299.

Discrepancy est. for linear gen. monomials, with R. Hofer, Acta Arith. 173 (2015) p. 183–196.

Modified Truncated Perron Formulae, Ann. Blaise Pascal 33 (2016), p. 109–128.

Discrepancy for generalized pols, with A. Mukhopadhyay & G.K. Viswanadham, Monath. Math. 187 (2018), p. 343–356.

Variant of Trunc. Perron Formula/Primes in Polynomial Sets, with D.S. Ramana, I.J.N.T. 16 (2020), p. 309–323.

Notes on the domain of exponent pairs, with J. Cassaigne and S. Drappeau, Math. Newsl. 33 (2022), 9 pp.

Polynomial values / Number fields:

On Sums of 7 Cubes, with F. Bertault et P. Zimmermann, Math. Comp. 68 (1999) p. 1303–1310.

Nombre de racines d'un polynôme entier modulo q, with M.Branton, J. T. N. Bordeaux 10 (1998) p. 125–134.

An explicit seven cube theorem, Acta Arith. 118 (2005), p. 375–382.

An asymptotic seven cubes Theorem, Manuscripta Math. 124 (2007), p. 59–75.

Counting ideals in ray classes, with Sanoli Gun & Jyothsnaa Sivaraman, J.N.T. 243 (2023), p. 13–37.

Problems with divisors or arithmetical functions:

The number of rational numbers determined by large sets of integers, with J. Cilleruelo and D.S. Ramana, Bull. Lond. Math. Soc. 42 no 3 (2010), p. 517–526.

Explicit upper bounds for the remainder in the divisor pb, with D. Berkane et O. Bordellès, Math. of Comp. 278 (2012), p. 1025-1051.

Expl. averages of non-neg. mult. fcts: beyond main term, with Akh. P.,Coll. Math. 147 (2017) p. 275-313.

Quotients and products of thin subsets of the positive integers, with J. Cilleruelo and D.S. Ramana, Proc. Steklov Inst. of Math. vol 296 (2017), p. 52–54; transl. in Tr. Mat. Inst. Steklova 296, 58-71 (2017).

Tail of a Moebius sum with coprimality conditions, with Akhilesh P., Integers (2017) 6 pp.

The number of rationals determined by large sets of sifted integers, Proceedings - Mathematical Sciences (Indian Academy of Sciences) 132 (2022), 13 pp.

A modular analogue of a pb of Vinogradov, with R. Acharya, S. Drappeau, S. Ganguly, Ramanujan J. (2022), 13 pp.

A higher order Levin-Fainleib Theorem, with A. Sedunova & R. Sharma, Proceedings - Mathematical Sciences (Indian Academy of Sciences) 133 (2023), 13 pp.

Combinatorial Problems:

A stronger model for Peg Solitaire, Mathematics Newsletter, vol. 32, (2022) p. 35–49.

Planik and Square Dance, two planar permutation games, Resonance, J. of Science Education (2023), 15 pp.

• Papers being processed

Representing ideal classes of ray class groups by products of prime ideals of small size, with J.-M. Deshouillers, Sanoli Gun & Jyothsnaa Sivaraman, sub. 2022, 35 pp.

An application of counting ideals in ray classes, with Sanoli Gun & Jyothsnaa Sivaraman, sub. 2023, 25 pp.

A spectral resolution of the large sieve, sub. 2023, 55 pp.

Convol. of periodic mult. fcts and the divisor pb, with Marco Aymone, Gopal Maiti & Priyamvad Srivastav, sub. 2023, 24 pp.

• Large audience

Estimation de l'ordre moyen d'une fonction arithmétique par la méthode de convolution, with P. Berment, RMS 212 (2012), 15pp.

Goldbach et les sommes de nombres premiers, La Recherche 213 (2013), p. 68-71.

Primes: emergence and victories of bilinear decomposition, Newsletter of the EMS 90 (2013), p. 18-27.

Nombres premiers: ils cachent un ordre secret, Conseiller de R. Ikonicoff, Sciences & Vie 1189 (2016), p. 74-77.

Large audience conferences in primary (!) and secundary schools, in colleges/univ. in France and India. Coordinator for Maths en Jeans and Hippocampe traineeship. Mathematical stands in several places.

• Books (and two book chapters)

Cent et Un ans après Hadamard et de la Vallée-Poussin, a chapter in "Les nombres – Problèmes anciens et actuels" (collection Mathémathèmes – Ellipses) (2000) p. 91–101.

Variations modernes sur la suite des nombres premiers. *De la densité des sin(p) lorsque p parcourt l'ensemble des nombres premiers*, lulu.com, 2006, 105 pp.

Arithmetical aspects of the large sieve inequality, with the collabor. of D.S. Ramana, Harish Chandra Research Institute Lecture Notes 1 (January 2009), Hindustan Book Agency , 201+8 pp.

Un parcours explicite en théorie multiplicative, Éd. Universitaires Européennes, 2010, vii+100 pp.

A sketch of H. Helfgott's proof of Goldbach's Ternary Conjecture, in "Goldbach's Conjecture: Selected Topics" by M. Rassias, Springer 2016.

Excursions in Multiplicative Number Theory, book with the collaboration of P. Moree and Alisa Sedunova, Birkhäuser Advanced Texts Basler Lehrbücher 2022, 333+XXII pp.

• High level courses

2005 Lille *"Initiation au crible de Selberg"*,
2005 HRI (Allahabad, India) *"On the large sieve inequality"*,
2008 HRI (Allahabad, India) *"On the weighted sieve"*,
2009 HRI (Allahabad, India) *"On Bombieri's approach to the weighted sieve"*,
2009 Lille *"Initiation au grand crible"*,
2009 Tunis (Tunisia) *"On the Hoheisel Theorem"*,
2010 IMSc (Chennai, India) *"Introduction to the notion of local models and pseudo characters, with applications"*,
2011 IMSc (Chennai, India) *"On the weighted sieve"*,
2011 IMSc (Chennai, India) *"On the parity principle"*,
2012 Nouakchott (Mauritania) *"Average values of multiplicative functions: the elementary approach"*,
2013 Monastir (Tunisia) *"Séries de Dirichlet et transformées de Mellin en théorie analytique des nombres"*,
2013 Nouakchott (Mauritania) *"Average values of multiplicative functions: the analytical approach"*,
2014 Lethbridge (Canada) *"Selected topics in Analytic Number Theory"*,
2016 IMSc (Chennai, India) *"Montgomery's sieve"*,
2020 KSOM (Kozhikode, India) *"Topics in Multiplicative Number Theory"*,
2021 Indian Working Group (Online) *"Topics in Multiplicative Number Theory"*,
2022 ISI (Kolkata, India) *"Transference Principle for Primes, Enveloping Sieve and Majorant Property"*.
2023 KSOM (Kozhikode, India), with Akhilesh P, K. Viswanadham, R. Mawia, S. Ganguly and S. Laishram, *"Introduction to character sum estimates and primes in arithmetic progressions"*,
2023 ISI (Kolkata, India) *"The Harman sieve and trigonometric polynomials"*.
2023 BIRS (Kelowna, Canada) *"Explicit density estimates"*.
2024 ISI (Kolkata, India) *"Density estimates and large values of Dirichlet polynomials"*.

• Editorial activities

In the editorial board of

The IMSc Lecture Notes Series
http://www.hindbook.com/index.php/imsc-lecture-notes-series
A series of lectures notes from the Institute Math Science in Chennai.

The North Western Journal of Mathematics
http://math.univ-lille1.fr/~nwejm/
A high-level math. journal open to all areas of pure and applied mathematics incl. history of math.

N'Autre École / Questions de classe(s)
http://www.questionsdeclasses.org/larevue/
In french. Une revue pédagogique, éducative et sociale.

Notes on Number Theory and Discrete Mathematics.
https://nntdm.net/
A journal from the publishing house of the Bulgarian Academy of Sciences .

The Ramanujan Journal.
https://www.springer.com/journal/11139
This journal publishes papers of the highest quality in all areas of math. influenced by Ramanujan.

Students

1999/2003 (PhD)– Habiba Kadiri http://www.cs.uleth.ca/~kadiri/
Une région explicite sans zéro pour les fonctions L de Dirichlet.

2005 (M.phil)– Joseph Basquin *Autour du théorème de Brun-Titchmarsh.*

2006 (M.phil)– Patrick Lemaire
Petits intervalles contenant des premiers dans une progression arithmétique donnée.

2006 (M.phil)– Amandine Saldana
Un théorème de Levin-Fainleib pour le crible d'Eratosthènes-Legendre.

2006/2009 (PhD) – Amandine Saldana
Séries de Dirichlet à deux variables et distribution des valeurs de fonctions arithmétiques.

2009 (M.phil) – Vincent Devinck *Around an idea of Bombieri on the Selberg sieve.*

2009 (M.phil ENS Cachan) – Perrine Berment
Estimation de l'ordre moyen d'une fonction arithmétique par la méthode de convolution.

2010/2012 (PhD) co-director A. Djebbar – Djamel Berkane
https://www.researchgate.net/profile/Djamel-Berkane
Valeurs moyennes de quelques fonctions arithmétiques.

2010/2013 (PhD) – Sumaia Saad Eddin
https://www.oeaw.ac.at/ricam/staff/sumaia-saad-eddin
On two problems concerning the Laurent-Stieltjes coefficients of Dirichlet L-series.

2013/2015 (Diplôme Supérieur de Recherches) – Sumaia Saad Eddin
Sur deux questions de théorie analytique des nombres.

2014/2015 (PhD) – Ramdin Mawia https://www.isical.ac.in/ramdin-mawia
Fonctions de Hardy des séries L et sommes de Mertens explicites.

2014/2017 (PhD) co-director B. Martin – Florian Daval

2016 (M.phil Nouakchott) – Lemine Inejih *Autour de l'inégalité de Polya-Vinogradov.*

2015/2018 (PhD) – Nathalie Debouzy *Nb presque premiers jumeaux sous une conj. d'Elliott-Halberstam*

2015/2018 (PhD) co-director M. A. Beddi – Mohamed Haye Betah
Un théorème de Gallagher pour la fonction de Moebius.

2023 (M.phil) Fatma Çiçek, Marcella Manivel, Alexander Slamen, Leon Tsai
Explicit short intervals with sums of two primes.

Additional activities

Pariemacs https://ramare-olivier.github.io/ServeurPerso/GP-PARI/index.html
Two Emacs modes written to use jointly Emacs and Pari/GP.

Mathematical games https://ramare-olivier.github.io/Jeux/IndexJeux.html
Six games are being presented and partially analyzed.

The EMT-TME project https://tmeemt.github.io/Chest/
Fully explicit results in multiplicative number theory are often scattered through the literature. The aim of this project and site is to present an annotated bibliography in order to keep track of the current knowledge.

Languages

French : Native **English** : Fluent **German** : Limited **Hindi** : Soon to be