

CNRS RESEARCHER IN MATHEMATICS



● DIPLOMAS

- JUNE 12TH 2003** Habilitation à diriger des recherches, *University of Lille 1*,
“*Un parcours explicite en théorie multiplicative*”
Jury. Président : J.-M.Deshouillers ; Rapporteurs : M.Balazard, H.Daboussi,
A.Granville ; Examineurs : H.Iwaniec, H.Queffelec
- JANUARY 12TH 1991** Thèse de troisième cycle, *University of Bordeaux 1*
“*Contribution au problème de Goldbach :*”
“*tout entier supérieur à 1 est somme d’au plus 13 nombres premiers*”
Directeur : J.-M.Deshouillers,
Jury : F.Dress, E.Fouvry, A.Ivič, J.-L.Nicolas, M.Olivier, G.Tenenbaum
- JUNE 1989** M.Phil. in mathematics, *University of Bordeaux 1*
- JUNE 1988** Agrégation de mathématiques, option informatique
- SEP 1985 – SEP 1989** Student at the Superior Normal School of Saint-Cloud

● LANGUAGES

FRENCH : Native **ENGLISH** : Fluent **GERMAN** : Basic knowledge

● POSITIONS HELD

- JUNE 2016 - NOW** Researcher 1st class, Aix Marseille Université
CNRS, Institut de Mathématiques de Marseille, UMR 7373
- OCT 1996 - MAY 2016** Researcher 1st class, University of Lille 1
- OCT 1992 - OCT 1996** Researcher 2nd class, 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 Superior Normal School of Saint-Cloud.

● SOME SELECTED ACTIVITIES

- 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,
- MEMBER OF THE EDITORIAL COMMITTEE** of the *Institute of Mathematical Science Lecture Notes series*, from 2012 onwards, of the *North-Western European Journal of Mathematics*, from 2014 onwards, and of *N’Autre Ecole / Question de Classe(s)*, from 2012 onwards,
- HEAD OF THE SMF PUBLISHING HOUSE** June 2010 / June 2013, vice-president of the SMF (French Mathematical Society) June 2010 / June 2012, vice-director June 2009 / June 2010,
- THESIS ADVISOR** for H. Kadiri 1999–2002, A. Saldana 2006–2009, D. Berkane 2009–2012, S. Saad Eddin 2009–2013, R. Vanlalgaia 2014–2015, F. Daval 2014–, S. Saad Eddin (DSR) 2013–2015, N. Siebert 2015–, M. H. Betah 2015–
- CO-ORGANIZER OF THE NUMBER THEORY YEAR** in Chennai (India): fourteen one-month courses in Number Theory at the Institute of Mathematical Science from Sep. 2010 to June 2012,
- CO-ORGANIZER OF INTERNATIONAL CONFERENCES**: 1997, 2001, 2008 and 2009,
- MEMBER OF** the hiring committee in Lille 1 from 1998 to 2010,
- MEMBER OF** the ANR scientific evaluation committee Mathematics / Theoretical Computer Science in 2014 and 2015.

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 no 1 (2010), p. 181–196.
 ON BOMBIERI ASYMPTOTIC SIEVE, J. Number Theory, vol 130 no 5 (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.
 A NOTE ON ADDITIVE PROPERTIES OF DENSE SUBSETS OF SIFTED SEQUENCES, Bull. Lond. Math. Soc. 45 (2013), p. 677–682.

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.
 EXPL. EST. FOR THE SUMMATORY FUNCT. OF $\frac{\Lambda(n)}{n}$ FROM THE ONE OF $\Lambda(n)$, Acta Arith. 159 (2013), p.113–122.
 ELEMEN. EXPL. BOUNDS FOR TWO MOLLIFICATIONS OF MOEBIUS FUNCT., Funct. Approx. 49 (2013), p.229–240.
 FROM EXPL. EST. FOR THE PRIMES TO EXPL. EST. FOR MOEBIUS FUNCT., Acta Arith. 157 (2013), p.365–379.
 EXPL. EST. ON SUM. FUNCT. OF MOEBIUS FUNCT. WITH COPRIM. RESTRICTIONS, Acta Arith. 165(2014), p.1–10.
 EXPL. EST. ON SEVERAL SUMMATORY FUNCT. INVOLVING MOEBIUS FUNCT., Math. Comp. 84 (2015), p. 1359–1387.
 EXPL. ESTIMATES: FROM $\Lambda(n)$ TO $\Lambda(n)/n$ IN ARITHMETIC PROGRESSIONS, with D. Platt, 2015, 15 pp, Exp. Math.

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 GENERAL., Funct. Approx. 42 (2010), p. 145–151.
 AN EXPL. DENSITY ESTIMATE FOR DIRICHLET L -SERIES, Math. Comp. 85 (2016), p. 325–356.
 PRODUCTS OF PRIMES IN ARITH. PROG...., with A. Walker, J. T. N. Bordeaux (2016) 9 pp.

ARITHMETIC OF INTEGER MATRICES:

- AVERAGE ORDERS OF MULT. ARITH. FUNCT. OF INTEGER 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 THE SUBGROUPS OF ABELIAN p -GROUPS, Pub. Math. Debrecen (2016) 15pp.

DISTRIBUTION OF POLYNOMIAL VALUES:

- ON SUMS OF SEVEN CUBES, with F.Bertault et P.Zimmermann, Math. Comp. 68 (1999) p. 1303–1310.
 NOMBRES 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.

HARMONIC ANALYSIS / DISCREPANCY:

- ALMOST PERIODICITY OF S. ERROR TERMS IN PRIME N. TH., with J. Kaczorowski, Acta Arith. 106 (2003), p. 277–297.
 AN. FOURIER DES FRACT. CONTINUES À QUOTIENTS RESTREINTS, with M. Queffelec, Ens. Math. 49 (2003), p. 335–356.
 FIBONACCI NUMBERS AND TRIGONOMETRIC IDENTITIES, with N. Garnier, Fibonacci Quat. 46/47 (2008), p. 56–61.
 A REM. ON THE GEOM. OF SPACES OF FCTS WITH PRIME FREQ., with P. Lefèvre and E. Matheron, Acta Math. Hungarica 143 (2014), p. 75–80.
 TAUBERIAN OSCILLATION TH. AND THE DISTRIB. OF GOLDBACH NUMBERS, with G. Bhowmik and J.-C. Schlage-Puchta, 2015, J. T. N. Bordeaux, 7 pp.
 DISCREPANCY ESTIMATES FOR SOME LINEAR GENERALIZED MONOMIALS, with R. Hofer, 2015, 15 pp. Acta Arith.
 MODIFIED TRUNCATED PERRON FORMULAE, Ann. Blaise Pascal, 2016, 20 pp.

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 PROBLEM, with D. Berkane et O. Bordellès, Math. of Comp. 278 (2012), p 1025-1051.

EXPLICIT AVERAGES OF NON-NEGATIVE MULTIPLICATIVE FUNCTIONS: GOING BEYOND THE MAIN TERM, with Akh. P., Coll. Math., 2013, 21 pp.

QUOTIENTS AND PRODUCTS OF THIN SUBSETS OF THE POSITIVE INTEGERS, with J. J. Cilleruelo and D.S. Ramana, Proc. Steklov Inst. of Math. (2016), 15 pp.

● LARGE AUDIENCE

ESTIMATION DE L'ORDRE MOYEN D'UNE FONCTION ARITHMÉTIQUE PAR LA MÉTHODE DE CONVOLUTION, with P. Berment, RMS 212 no 1 (2012), 15pp.

GOLDBACH ET LES SOMMES DE NOMBRES PREMIERS, La Recherche 213 (2013), p. 68–71.

PRIME NUMBERS: EMERGENCE AND VICTORIES OF BILINEAR FORMS DECOMPOSITION, Newsletter of the EMS 90 (2013), p. 18–27.

● PAPERS BEING PROCESSED

Improving on the Brun-Titchmarsh Theorem, II, with S. Yazdani, sub. to Trans. of AMS, 2015, 45 pp.

A spectral resolution of the large sieve and a circle method à la H. Iwaniec, sub. to Duke Math. J., 2016, 48 pp.

● 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 Mathématiques – 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 collaboration 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, Éditions 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.

● HIGH LEVEL COURSES

2005 Lille, 36 hours, “*Initiation au crible de Selberg*”,

2005 HRI (Allahabad, India) 8 hours, “*On the large sieve inequality*”,

2008 HRI (Allahabad, India) 8 hours, “*On the weighted sieve*”,

2009 HRI (Allahabad, India) 8 hours, “*On Bombieri's approach to the weighted sieve*”,

2009 Lille, 36 hours, “*Initiation au grand crible*”,

2009 Tunis, 4 hours, “*On the Hoheisel Theorem*”,

2010 IMSc (Chennai, India), 10 hours,

“*Introduction to the notion of local models and pseudo characters, and applications*”,

2011 IMSc (Chennai, India), 12 hours, “*On the weighted sieve*”,

2011 IMSc (Chennai, India), 4 hours, “*On the parity principle*”,

2012 Nouakchott, Mauritania, 32 hours, “*Average values of multiplicative functions*”,

2013 Monastir, Tunisia, 6 hours,

“*Séries de Dirichlet et transformées de Mellin en théorie analytique des nombres*”,

2013 Nouakchott, Mauritania, 33 hours, “*Average values of multiplicative functions: the analytical approach*”,

2014 Lethbridge, Canada, 9 hours, “*Selected topics in Analytic Number Theory*”,

2016 IMSc (Chennai, India), 3 hours, “*Montgomery's sieve*”.

● STUDENTS

1999/2003 (PHD) – HABIBA KADIRI

<http://www.cs.uleth.ca/~kadiri/>

Une région explicite sans zéro pour les fonctions L de Dirichlet.

2006/2009 (PHD) – AMANDINE SALDANA

Séries de Dirichlet à deux variables et distribution des valeurs de fonctions arithmétiques.

2010/2012 (PHD) – DJAMEL BERKANE.

2010/2013 (PHD) – SUMAIA SAAD EDDIN

http://www.researchgate.net/profile/Sumaia_Saad_Eddin

On two problems concerning the Laurent-Stieltjes coefficients of Dirichlet L-series.

2013/2015 (DSR) – SUMAIA SAAD EDDIN

Sur deux questions de théorie analytique des nombres.

2014/2015 (PHD) – RAMDINMAWIA VANLALNGAIA

<http://www.hri.res.in/people/Mathematics/ramdinmawia>

Fonctions de Hardy des séries L et sommes de Mertens explicites.

2014/NOW (PHD) – FLORIAN DAVAL

2015/NOW (PHD) – NATHALIE SIBERT

2015/NOW (PHD) – MOHAMED HAYE BETAH

● EDITORIAL ACTIVITIES

IN THE EDITORIAL COMMITTEE 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 mathematical journal open to all areas of pure and applied mathematics including history of mathematics.

N'AUTRE ÉCOLE / QUESTIONS DE CLASSE(S)

<http://www.questionsdeclasses.org/larevue/>

In french. Une revue pédagogique, éducative et sociale.

● ADDITIONAL ACTIVITIES

PARIEMACS <http://iml.univ-mrs.fr/~ramare/ServeurPerso/GP-PARI/index.html>

Two emacs modes written to use jointly emacs and pari/gp.

MATHEMATICAL GAMES <http://iml.univ-mrs.fr/~ramare/Jeux/IndexJeux.html>

Four games are being presented and partially analyzed.

THE EMT-TME PROJECT <http://iml.univ-mrs.fr/~ramare/TME-EMT/accueil.html>

Fully explicit results in multiplicative number theory are often scattered through the literature. The aim of this site is to present an annotated bibliography in order to keep track of the current knowledge.