

# CURRICULUM VITAE

Marian Văjăitu

## Present Position

Senior Researcher, *Simion Stoilow* Institute of Mathematics of the Romanian Academy

## Degrees

- Master, Mathematics, University of Bucharest 1987. Dissertation: “Riemann’s zeta function and applications in Number Theory”. Advisor: Professor Nicolae Popescu
- Ph.D., Mathematics, University of Bucharest 1994. Thesis: “Estimations of the ideal generated by the values of a polynomial over a Dedekind ring”. Advisor: Professor Nicolae Popescu

## Research Interests

- $p$ -adic Analysis
- Analytic and Algebraic Number Theory
- $p$ -adic Analytic Number Theory
- Local fields
- Distribution of sequences

## Professional Experience

- Teacher at the Computer Science High School of Petrosani, 1987-1990
- Institute of Mathematics of the Romanian Academy, July 1990 - November 1990, Mathematician
- Institute of Mathematics of the Romanian Academy, Scientific Researcher, 1990-1997
- Institute of Mathematics of the Romanian Academy, Senior Researcher, 1997-present

## Honors

- *Gheorghe Lazar* prize of the Romanian Academy, 2001
- *The “Prize of the Bucovinean Brothers Sârghie”*, awarded in 1985 by “Fundăția Frații Bucovineni Sârghie” and the University of Bucharest

### Professional Service

- Member of the Scientific Council of the “Simion Stoilow” Institute of Mathematics of the Romanian Academy, 2009 - 2012, 2016-present
- Referee (PhD theses): Romania, Pakistan

### Grant Activity

- ANSTI-GRANT 6189/2000-2002; CERES 153/11.2001; CERES 4-147/2004; CE-4; CERES 3-28/2003-2005; GRANT CEEEX 05-D11-11/2005; 2-CEX 06-11-20/2006;(MATAG) (contract CEx05-D11-11/04.10.05); CIDAGT (contract 249-Cex-M3-249-2006); (ISAGET) (grant 2-CEX06-11-20/25.07.06); Grant CNCSIS cod 1116-106/107;2007/2008; Project Coordinator for the grant no. 248569, FP7-MC-IRG, 2009-2013

### PhD Students

- Cosmin Constantin Nițu: *p-adic distributions, Krasner analytic functions and applications*, Simion Stoilow Institute of Mathematics of the Romanian Academy, 2017

### Scientific Seminars and Other Scientific Activities

- Coordinator of the Scientific Seminar “*Nicolae Popescu*” Number Theory
  - A lot of my work has been presented at National and International Conferences
- You have below the complete list of my scientific papers.

### Publications

- [1] Graham’s Conjecture under Riemann Hypothesis, J. Number Theory, vol.31, No.1, 1989, 80–87. (With C. Cobeli and A. Zaharescu.) MR0978101 (90c:11064).
- [2] Doctoral thesis, Estimations of the ideal generated by the values of a polynomial over a Dedekind ring, 1994.
- [3] The ideal generated by the values of a polynomial over a Dedekind ring, Rev. Roumaine math. pures appl., 42(1997), 1–2, 155–161. MR1650032 (99m:13037).
- [4] An inequality involving the degree of an algebraic set, Rev. Roumaine math. pures appl., 43(1998), 3–4, 451–455. MR1845541 (2002e:13039).

- [5] A finiteness theorem for a class of exponential congruences, Proc. of the American Math. Soc., 127(1999), no.8, 2225–2232. (With A. Zaharescu.) MR1486757 (99j:11003).
- [6] The sequence  $n! \pmod{p}$ , Journal of the Ramanujan Math. Soc., 15(2000), no.2, 135–154. (With C. Cobeli and A. Zaharescu.) MR1754715 (2001g:11153).
- [7] Average estimates for the number of tuples of inverses  $\pmod{p}$  in short intervals, Bull. Math. Soc. Sc. Math. Roumanie, Thome 43(91), no.2, 2000, 155–167. (With C. Cobeli and A. Zaharescu.) MR1881326 (2002k:11168).
- [8] Uniform distributions in  $p$ -adic fields. An Erdos–Túran inequality, Buletin Stiintific–Univ. Pitesti, Seria Matematica si Informatica, Nr.5(2000), 1–7. (With A. Zaharescu.)
- [9] The analytic continuation problem for  $p$ -adic  $L$ -functions, Math. Reports, vol.2(52), no.3(2000), 379–389. (With A. Zaharescu.) MR1889620 (2003b:11130).
- [10] Exponential sums and their role in number theory (I), Rev. Roumaine 45, nr.6(2000), 1031–1045. (With A. Zaharescu.) MR1886536 (2002m:11076).
- [11] An Erdos–Túran inequality in  $p$ -adic fields, Math. Reports, vol.2(52), no.2(2000), 243–252. (With A. Zaharescu.) MR1890979 (2003a:11093).
- [12] Integer points unusually close to elliptic curves, Math. Portugaliae vol.58, Fasc.2(2001), 211–218. (With A. Zaharescu.) MR1836263 (2002e:11047).
- [13] Equidistribution of rational functions of primes  $\pmod{q}$ , Journal of the Ramanujan Math. Soc. vol.16, no.1(2001), 63–73. (With C. Cobeli and A. Zaharescu.) MR1824884 (2002b:11102).
- [14] Integer points near hyperelliptic curves, C.R.Math.Rep. Acad.Sci. Canada, vol.23(2001), 84–90. (With A. Zaharescu.) MR1852803 (2002e:11085).
- [15]  $L$ -functions associated to Galois orbits in  $\mathbb{C}_p$ , Math. Reports, vol.3(53), nr.1(2001), 83–89. (With A. Zaharescu.) MR1887188 (2003d:11175).
- [16] Groups of isometries on ultrametric spaces, Bull. Math. Soc. Sc. Math. Roumanie, Thome 44(92), no.2(2001), 183–191. (With A. Zaharescu.) MR2015104 (2004i:20006).

- [17] The change of space problem for metric locally constant functions, *Buletin Stiintific-Univ. Pitesti, Seria Matematica si Informatica*, Nr.7(2001), 179–183. (With A. Zaharescu.)
- [18] Galois groups with metric constraints, *Bull. Math. Sci. Roumaine*, vol.44(92), no.3(2001), 211–219. (With A. Zaharescu.) MR2013339 (2004g:11105).
- [19] Uniform distribution of polynomial sequences in  $p$ -adic fields, *Buletin Stiintific-Univ. Pitesti, Seria Matematica si Informatica*, no.9(2003), 345–348. (With A. Zaharescu.)
- [20] Exponential sums and their role in number theory (II), *Rev. Roumaine* 47(2002), 135–148. (With A. Zaharescu.) MR1978194 (2004e:11084).
- [21] Integer points close to algebraic curves, *Journal of the L.M.S.*, vol.65(2002), no.2, 10–26. (With F.P. Boca and A. Zaharescu.) MR1875132 (2003b:11067).
- [22] On the set  $ax + bg^x \pmod{p}$ , *Math. Portugaliae*, vol.59, Fasc.2(2002), 195–203. (With C. Cobeli and A. Zaharescu.) MR1907414 (2003d:11113).
- [23] Differences between powers of a primitive root, *Internat. Journal Math. Sci.*, vol.29, no.6(2002), 325–331. (With A. Zaharescu.) MR1897859 (2003e:11002).
- [24] Chains of metric invariants over  $p$ -adic fields, *Acta Arithmetica*, 103, 1(2002), 27–40. (With A. Popescu, N. Popescu and A. Zaharescu.) MR1904892 (2003g:11138).
- [25] Generalization of a theorem of Steinhaus, *Colloq. Math.*, vol.92(2002), no. 1–2, 257–266. (With C. Cobeli, G. Groza and A. Zaharescu.) MR1899442 (2003h:11082).
- [26] Distribution of values of rational maps on the  $\mathbf{F}_p$ -points on an affine curve, *Monatshefte fur Mathematik*, 136(2002), 81–86. (With A. Zaharescu.) MR1908082 (2003f:11089).
- [27] Character sums and pair correlations, *Demonstratio Math.*, vol.35, no.2(2002), 225–232. (With A. Zaharescu.) MR1907295 (2003d:11123).
- [28] A class of algebraic-exponential congruences modulo  $p$ , *Acta Math. Univ. Comenianae*, 71(2002), no.1, 113–117. (With C. Cobeli and A. Zaharescu.) MR1943018 (2003m:11208).
- [29] A class of irreducible polynomials, *Journal of the Ramanujan Math. Soc.* vol.17(2002), no.3, 161–172. (With M. Cavachi and A. Zaharescu.) MR1925187 (2003g:12002).

- [30] Polynomial–exponential equations modulo  $p$ , Buletin Stiintific-Univ. Pitesti, Seria Matematica si Informatica, Nr.8(2002), 183–188. (With C. Cobeli and A. Zaharescu.)
- [31] Metric locally constant functions, Acta et Commentationes Universitatis Tartuensis de Mathematica, vol.6(2002), 29–36. (With A. Zaharescu.) MR1962874 (2004d:11117).
- [32] Distinct gaps between fractional parts of sequences, Proc. A.M.S., vol.130, no.12(2002), 3447–3452. (With A. Zaharescu.) MR1918819 (2003d:11112).
- [33] Distribution of gaps between the inverses  $(\text{mod } q)$ , Proc. Edinburgh Math. Soc., 46(2003), 185–203. (With C. Cobeli and A. Zaharescu.) MR1961820 (2004a:11105).
- [34] Sequences of values of power series over  $p$ –adic fields, Revue Roumaine, 48(2003), 2, 211–216. (With A. Zaharescu.) MR1999021 (2004i:11089).
- [35] On the unicity of immediate maximal extensions of valued fields, Math. Journal of Ibaraki Univ., vol.35(2003), 29–33. (With A. Zaharescu.) MR2040538.
- [36] Nonarchimedean valuation on  $\mathbb{R}$  and  $\mathbb{C}$ , Math. Reports, 5(55), 3(2003), 263–269. (With A. Zaharescu.) MR2076851.
- [37] Some asymptotic formulas involving primes in arithmetic progression, Commentarii Math. Univ. St. Pauli, Japan, Vol. 53, No. 1(2004), 23–35. (With C. Cobeli, L. Panaitopol and A. Zaharescu.) MR2084357.
- [38] Regularization on ordered sheaves, Revue Roumaine math. pures appl., **49**(2004), 3, 299–305. (With A. Zaharescu.) MR2098740.
- [39] An irreducibility criterion for polynomials in several variables, Acta Math. Univ. Ostrav. 12(2004), no. 1, 13–18. (With M. Cavachi and A. Zaharescu.) MR2214668.
- [40] Primitive arcs on elliptic curves, Revue Roumaine, **50**(2005), 1, 31–38. (With G. Groza and A. Zaharescu.) MR2155987.
- [41] Transformation formulas for  $L$ –functions associated with Galois orbits in  $\mathbb{C}_p$ , Revue Roumaine, **50**(2005), 1, 87–97. (With A. Zaharescu.) MR2155992.

- [42] On Krasner analytic functions and the  $p$ -adic Mellin transform, *Math. J. Ibaraki Univ.* 37(2005), 23-33. (With A. Zaharescu.) MR2207667.
- [43] On the distance between orbits under a group of isometries on a metric space. *Kumamoto J. Math.* 19(2006), 1-13. (With A. Zaharescu.) MR2211628.
- [44] On the existence of trace for elements of  $\mathbb{C}_p$ , *Algebr. Represent. Theory*, 9(2006), no. 1, 47-66. (With N. Popescu and A. Zaharescu.) MR2233116.
- [45] Wolstenholme matrices, *Math. Rep.* 8(58), (2006), no. 1, 1-8. (With E. Alkan, J. Sneed and A. Zaharescu.) MR2268379.
- [46] Discrepancy of fractions with divisibility constraints, *Monatsh. Math.*, 149(2006), no. 3, 179-192. (With E. Alkan, A.H. Ledoan and A. Zaharescu.) MR2275065.
- [47] Substitution formulas for a class of unbounded distributions. *Rev. Roumaine Math. Pures Appl.* 51(2006), no. 4, 513-526. (With A. Zaharescu.) MR2275065.
- [48] Discrepancy of sets of fractions with congruence constraints, *Rev. Roumaine Math. Pures Appl.* 51(2006), no. 3, 265-276. (With E. Alkan, A.H. Ledoan and A. Zaharescu.) MR2275343.
- [49] Measures of metric Haar type. *Math. Rep.* 8(58) (2006), no. 3, 327-334. (With A. Zaharescu.) MR2316802.
- [50] Trace functions and Galois invariant  $p$ -adic measures, *Publ. Mat.* 50(2006), no. 1, 43-55. (With A. Zaharescu.) MR2325009
- [51] Metric properties of the degree function over a  $p$ -adic field. *Rev. Roumaine Math. Pures Appl.* 52(2007), no. 1, 111-119. (With A. Zaharescu.) MR2341611.
- [52] The  $p$ -adic measure on the orbit of an element of  $\mathbb{C}_p$ . *Rend. Semin. Mat. Univ. Padova* 118(2007), 197-216. (With V. Alexandru, N. Popescu, A. Zaharescu.) MR2378396.
- [53] On the index of fractions with square-free denominators in arithmetic progressions, *Ramanujan J.* 16(2008), no. 2, 131-161. (With E. Alkan, A.H. Ledoan and A. Zaharescu.) MR2424917.

- [54] Lipschitzian distributions. *Rev. Roumaine Math. Pures Appl.* vol. 1, no. 53(2008), 79-88. (With A. Zaharescu.)
- [55] On the Iwasawa algebra associated to a normal element of  $\mathbb{C}_p$ , *Proc. Indian Acad. Sci. (Math. sci.)* Vol. 120, No. 1(2010), 45-55. (With V. Alexandru, N. Popescu, A. Zaharescu.)
- [56] On the intervals of a third between Farey fractions, *Bull. Math. Soc. Sci. Roumanie*, Tome 53(101), No. 3, 2010, 239-250. (With C. Cobeli and A. Zaharescu.)
- [57] On the  $\mathbb{C}_p$ -Banach algebra of the  $r$ -Lipschitz functions, *Bull. Math. Soc. Sci. Roumanie*, Tome 53(101), No. 3, 2010, 293-301.
- [58] A density theorem on even Farey fractions, *Rev. Roumaine Math. Pures Appl.* 54 (102) (2011), pag. 297-311. (With C. Cobeli, A. Zaharescu.)
- [59] Representation Results for Equivariant Rigid Analytic Functions, *Algebr. Represent. Theory*, **12** (2012), no. 1, 137-145. (With V. Alexandru, N. Popescu, A. Zaharescu.)
- [60] The distribution of rationals in residue classes, *Math. Reports*, vol. 14(64), no. 1, 2012, 1-20. (With C. Cobeli, A. Zaharescu.)
- [61] The behavior of rigid analytic functions around orbits of elements of  $\mathbb{C}_p$ , *Rend. Semin. Mat. Univ. Padova*, **127**(2012), 193-211. (With S. Achimescu, V. Alexandru, N. Popescu, A. Zaharescu.)
- [62] An algebraic-metric equivalence relation over  $p$ -adic fields, *Glasgow Math. J.* **54**(2012), 715-720. (With A. Zaharescu. )
- [63] On the norm of the trace functions and applications, *Bull. Math. Soc. Sci. Math. Roumanie* Tome 56(104) No. 1, 2013, 47-54. (With V. Alexandru and C.C. Nițu.)
- [64] On the zeros of Krasner analytic functions, *Algebr. Represent. Theory*, Vol. 16, issue 3, (2013) pp. 895-904. (With V. Alexandru, N. Popescu, A. Zaharescu. )
- [65] Integral representations and the behavior of Krasner analytic functions around singular points, *Algebr. Represent. Theory*, Vol. 16, issue 6, (2013) pp. 1611-1620.

- [66] On a class of Krasner analytic functions and applications, Bull. Math. Soc. Sci. Math. Roumanie, Tome 58 (106), No. 4, 2015, 475-482.
- [67] On the norm of Krasner analytic functions with applications to transcendence results, Journal of Pure and Applied Algebra, **219** (2015), 4607-4618. (With V. Alexandru, C.C. Nițu and A. Zaharescu.)
- [68] Isometric Galois actions over  $p$ -adic fields, Bull. Math. Soc. Sci. Math. Roumanie, Tome 59 (107), No. 4, 2016, 295-301. (With V. Alexandru and A. Zaharescu.)
- [69] On  $p$ -adic analytic continuation with applications to generating elements, Proc. Edinburgh Math. Soc., **59** (2016), 1-10. (With V. Alexandru and A. Zaharescu.)
- [70] Continuous automorphisms of transcendental closed subfields of  $\mathbb{C}_p$ , Monatsh. Math. (2016), 181:527-535. (With Victor Alexandru and Alexandru Zaharescu.)
- [71] On the Iwasawa modules of Galois orbits, Bull. Math. Soc. Sci. Math. Roumanie, Tome 61 (109), No. 1, 2018, 3-11. (With Victor Alexandru and Alexandru Zaharescu.)
- [72] Generating sets of Galois equivariant Krasner analytic functions, Rend. Semin. Mat. Univ. Padova, to appear. (With Victor Alexandru and Alexandru Zaharescu.)
- [73] Isomorphism theorems for Galois groups of splitting fields of polynomials, submitted. (With Victor Alexandru and Alexandru Zaharescu.)
- [74] On the zeros and singularities of the trace functions, in progress. (With Victor Alexandru and Alexandru Zaharescu.)
- [75] On a theorem of Vishik, in progress. (With C.C. Nițu.)

### Books

- [1] Non-Archimedean Integration and Applications, The Publishing House of the Romanian Academy, 2007, ISBN(13) 978-973-27-1466-9. (With A. Zaharescu.)



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