Curriculum Vitæ

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Name : Laurent Bartholdi
Title : Professor of Mathematics
Nationality : Swiss
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Birth date : August 28, 1973
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Languages Spoken

French : mother's tongue
English : fluent
German : good
Italian / Portuguese / Spanish / Russian / Chinese : basic

Education

March 2000 : Ph.D. in Mathematics at the University of Geneva, titled "Croissance de groupes agissant sur des arbres" (advisor Pierre de la Harpe)
May 1995 : Diploma in Mathematics at the University of Geneva (advisor Michel Kervaire)
July 1993 : First cycle of Mathematics and Computer Science studies at the University of Geneva

Academic Interests

Group theory and combinatorics (in particular groups acting on rooted trees, growth of groups, regular combings of groups, random walks on groups, and dynamical systems)
Dynamical Systems (in particuliar iteration of holomorphic maps).
Computer algebra and computational group theory

Employment

2015–2018 : Visiting professor at ENS Paris
2008– : Professor (W3) at the Georg-August University of Göttingen
2004–2008 : Assistant Professor at the École Polytechnique Fédérale, Lausanne
2001–2003 : Morrey Assistant Professor at the University of California at Berkeley
2000–2001 : Visiting Professor at Universities of California (Berkeley), Brasília and Jerusalem

Students

Olivier Siegenthaler : Discrete and profinite groups acting on regular rooted trees (PhD 9.2009)
Shariful Islam : Julia sets as Martin boundary (PhD 7.2010)
Dzmitry V. Dudko : Algebraic invariants of branched coverings (PhD 2.2012)
René Hartung : Algorithmic aspects of infinitely presented groups (PhD 6.2012)
Christian Bick : Bifurcations and chaos in network dynamical systems (PhD 11.2012)
Thomas Sicking : Lie dimension subrings (PhD, 4.2014–)
Thorsten Groth : Algorithmic problems in self-similar group theory (PhD, 11.2014–)

Patrick Neumann : Zeta functions of groups (Master 9.2011)
Thorsten Groth : The conjugacy problem in automata groups (Master 10.2014)

Patrick Neumann : Der Raum von endlich erzeugten Gruppen (Bachelor 7.2009)
Martin Nitsche : Streckenkomplexe (Bachelor 9.2012)
Michael Duppré : Lower bounds on the growth of Grigorchuk's group according to Leonov and Brieussel (Bachelor 10.2012)
Anton Nickel : Hurwitz' Satz über summen von Quadraten (Bachelor 4.2013)
Robin Richter : Hubbard trees (Bachelor 10.2013)
Malin Lachmann : Bisets of commuting functions and their Julia sets (Bachelor 4.2014)
Sina Bittens : Free Products and Galois groups arising from Arithmetic Operations (Bachelor 10.2014)

Prizes and Funding

2015–2018 : ACHN (hosting of high-level researchers, "@raction") of the french ANR, 550'000€
2013–2014 : Scientific expert at CIMI, Toulouse for 6 months
2013–2017 : DFG research grant (project BA 4197/6-1, "Spaces of rational maps"), 169'300€
2013–2017 : DFG research grant (project BA 4197/5-1, "Algorithmic aspects of branched groups"), 169'100€
2013–2016 : research grant of the Mercator foundation "KLEIN: Kulturell bildende Lernobjekte entwickeln, implementieren, neu machen", with Stefan Halverscheid and Max Wardetzky, 122'000€
2010 : Hua Luogeng prize of the Chinese Academy of Sciences , ∼90'000 RMB
2010–2017 : DFG research grant (project BA 4197/1-1, "Self-similar groups and algebras"), ∼130'000€
2008 : NSF travel grant for a conference (DMS 080xxxx, with V. Nekrashevych)
2006–2009 : ANR research grant (JCJC06_149094, with A. Erschler, S. Brofferio, C. Druţu, E. Breuillard, V. Guirardel, B. Rémy, and F. Dahmani)
2005–2008 : SNF research grant (project 105469/1)
2006–2007 : SNF research grant (project 111547/1)
2007 : SNF international exchange grant (project 116966/1 for F. Guéritaud)
2006 : SNF international exchange grant (project 113024/1 for C. Voll)
2003 : NSF travel grant (DMS 0307231, with V. Jones)
2001 : SNF Individual Support (project 83R-064282)
2000 : SNF Individual Support (project 83R-063208)

Other Professional Abilities

Programs in C, C++ and mathematical languages (Maple, GAP). Wrote in 1992, with Marc Vuilleumier, the Scheme interpreter PCS/GE (freely available from the CUI file server at University of Geneva).

Six selected publications, with summary

[1] Laurent Bartholdi, Rostislav Grigorchuk, and Volodymyr Nekrashevych, *From fractal groups to fractal sets*, Fractals in Graz 2001, 2003, pp. 25–118.

This paper is an introduction to the connection between the theory of dynamical systems and the theory of groups, via the "iterated monodromy groups".

In summary: let f be a topological branched covering on a space X. Let P be the f-orbit of the critical values of f. Thus f induces a map $f : X \setminus f^{-1}(P) \to X \setminus P$. Any choice of $x \in X \setminus P$ induces an action of the fundamental group $\pi_1(X \setminus P, x)$ on $T = \bigsqcup_{n \geq 0} f^{-n}\{x\}$. We consider T as the vertex set of a d-regular rooted tree, where d is the degree of f. Let G be the image of $\pi_1(X \setminus P, x)$ in $\mathsf{Aut}(T)$. We show that G is a "self-similar" group, and that the dynamical system generated by f on its attractor may be reconstructed from G.

[2] Laurent Bartholdi and Bálint Virág, *Amenability via random walks*, Duke Math. J. **130** (2005), no. 1, 39–56.

Let G be the "iterated monodromy group" (see the first reference) associated to the branched covering $f(z) = z^2 - 1$ of $\mathbb{C}$. We show that G is an amenable group, but that it does not belong to the family of "subexponentially amenable" groups, which are the groups inductively obtained from groups of subexponential growth using extensions and direct limits.

The existence of such groups answers an open question by Ceccherini, de la Harpe and Grigorchuk.

[3] Laurent Bartholdi, *Branch rings, thinned rings, tree enveloping rings*, Isr. J. Math. **154** (2006), 93–139.

I develop in this paper the theory of "branch algebras". They are infinite-dimensional associative algebras A that are isomorphic, up to taking subrings of finite codimension, to a matrix ring over themselves. More precisely, they admit an embedding $\phi : A \to M_d(A)$ and a finite-codimensional ideal K such that $\phi(K)$ contains $M_d(K)$.

In particular, for every field $\Bbbk$ I construct a $\Bbbk$-algebra A which

- is finitely generated and infinite-dimensional, but has only finite-dimensional quotients;
- has a subalgebra of finite codimension, isomorphic to $M_2(A)$;
- is prime;
- has quadratic growth, and therefore Gelfand-Kirillov dimension 2;
- is recursively presented;
- satisfies no identity;
- contains a transcendental, invertible element;
- is semiprimitive if $\Bbbk$ has characteristic $\neq 2$;
- is graded if $\Bbbk$ has characteristic 2;
- is primitive if $\Bbbk$ is a non-algebraic extension of $\mathbb{F}_2$;
- is graded nil and Jacobson radical if $\Bbbk$ is an algebraic extension of $\mathbb{F}_2$.

It was conjectured by Goodearl that if A is an algebra over a field $\Bbbk$ and has Gelfand-Kirillov dimension 2, then its Jacobson radical is nil. The algebra A above therefore provides a counterexample to that conjecture.

[4] Laurent Bartholdi and Volodymyr V. Nekrashevych, *Thurston equivalence of topological polynomials*, Acta Math. **197** (2006), no. 1, 1–51.

Consider the "rabbit" polynomial $f_R(z) \approx z^2 + (-0.1226 + 0.7449i)$, whose critical point 0 is on a periodic orbit of length 3. Up to affine transformations, there are exactly two other polynomials with same action on post-critical points (with the same *ramification graph*), called the "corabbit" $f_C \approx z^2 + (-0.1226 - 0.7449i)$ and the "airplane" $f_R \approx z^2 - 1.7549$. Furthermore, by a result of Thurston, every branched covering with same ramification graph is equivalent to precisely one of f_R, f_C, f_A.

Consider now a Dehn twist T of $\mathbb{C}$ around the two non-critical values of the f_R-orbit of 0. The map $T^m f_R$ is again a branched covering, and it has the same ramification graph as f_R; therefore it is equivalent (i.e., conjugate up to homotopies) to one of f_R, f_C, f_A. Which one?

This question was asked by Hubbard in the early 1990s. In this paper, we give the following answer:

Write m in base 4, as $m = \sum_{i=0}^{\infty} m_i 4^i$ with $m_i \in \{0, 1, 2, 3\}$ and almost all $m_i = 0$ if m is non-negative, and almost all $m_i = 3$ if m is negative. If one of the m_i is 1 or 2, then $T^m f_R$ is equivalent to f_A. Otherwise, it is equivalent to f_R if m is non-negative, and to f_C if m is negative.

The method of proof uses "iterated monodromy groups" (see the first reference) to study both f_R and an associated map on the moduli space of polynomials with prescribed post-critical behaviour.

[5] Laurent Bartholdi and Anna G. Erschler, *Growth of permutational extensions* **189** (2012), 431–455 pp., Invent. Math., DOI 10.1007/s00222-011-0368-x, available at `arXiv:math/1011.5266`.

The growth function of a group G, given with finite generating set S, is the function $\gamma(n)$ counting the number of elements of G that may be written as a product of at most n generators. If one identifies the functions $\gamma(n)$ and $\gamma'(n)$ whenever there exists $C > 0$ with $\gamma(n) \leq \gamma'(Cn)$ and $\gamma'(n) \leq \gamma(Cn)$, then the equivalence class of γ does not depend on S.

For "most" groups, this function is either polynomial or exponential; and an important question by Milnor (1968) asks whether this is always the case. Grigorchuk found an example of group whose growth function is intermediate between polynomial and exponential, but to this day no group had an asymptotically known growth function that was neither polynomial nor exponential.

We produce the first such examples. They are groups whose growth function is equivalent to $\exp(n^\alpha)$ for certain α logarithms of algebraic numbers.

[6] Laurent Bartholdi, Xavier Buff, Hans-Christian Graf von Bothmer, and Jakob Kröker, *Algorithmic construction of Hurwitz maps*, Experimental Mathematics **24** (2015), 76–92, DOI 10.1080/10586458.2013.860569, available at `arXiv:math/1303.1579`.

A classical result by Hurwitz establishes a bijection between ramified covers of the Riemann sphere on the one hand, and tuples of permutations subjected to certain conditions, on the other hand.

In case the cover has genus 0, we develop an algorithm that constructs the covering map as a rational function with complex coefficients.

We apply this algorithm to a problem in holomorphic dynamics due to Cui, which asks under which conditions a rational map admits a Sierpinski carpet as Julia set.

Publications by Laurent Bartholdi

Published papers

[1] Laurent Bartholdi, Serge Cantat, Tullio Ceccherini-Silberstein, and Pierre de la Harpe, *Estimates for simple random walks on fundamental groups of surfaces*, Colloq. Math. **72** (1997), no. 1, 173–193, available at `arXiv:math/0612409`. MR1425552 (98d:60133a)

[2] Laurent Bartholdi, *The growth of Grigorchuk's torsion group*, Internat. Math. Res. Notices **20** (1998), 1049–1054, DOI 10.1155/S1073792898000622, available at `arXiv:math/0012108`. MR1656258 (99i:20049)

[3] ———, *Counting paths in graphs*, Enseign. Math. (2) **45** (1999), no. 1-2, 83–131, available at `arXiv:math/0012161`. MR1703364 (2000f:05047)

[4] ———, *Lamps, factorizations, and finite fields*, Amer. Math. Monthly **107** (2000), no. 5, 429–436, DOI 10.2307/2695298, available at `arXiv:math.CO/9910056`. MR1763395 (2001e:11118)

[5] Laurent Bartholdi and Rostislav I. Grigorchuk, *Lie methods in growth of groups and groups of finite width*, Computational and geometric aspects of modern algebra (Edinburgh, 1998), London Math. Soc. Lecture Note Ser., vol. 275, Cambridge Univ. Press, Cambridge, 2000, pp. 1–27, DOI 10.1017/CBO9780511600609.002, available at `arXiv:math/0002010`. MR1776763 (2001h:20046)

[6] ———, *Spectra of non-commutative dynamical systems and graphs related to fractal groups*, C. R. Acad. Sci. Paris Sér. I Math. **331** (2000), no. 6, 429–434, DOI 10.1016/S0764-4442(00)01658-X, available at `arXiv:math/0012174` (English, with English and French summaries). MR1792481 (2001i:37012)

[7] L. Bartholdi and R. I. Grigorchuk, *On the spectrum of Hecke type operators related to some fractal groups*, Tr. Mat. Inst. Steklova **231** (2000), no. Din. Sist., Avtom. i Beskon. Gruppy, 5–45, available at `arXiv:math/9910102`; English transl., Proc. Steklov Inst. Math. **4 (231)** (2000), 1–41. MR1841750 (2002d:37017)

[8] Laurent Bartholdi, *Lower bounds on the growth of a group acting on the binary rooted tree*, Internat. J. Algebra Comput. **11** (2001), no. 1, 73–88, DOI 10.1142/S0218196701000395, available at `arXiv:math/9910068`. MR1818662 (2001m:20044)

[9] Laurent Bartholdi and Rostislav I. Grigorchuk, *Sous-groupes paraboliques et représentations de groupes branchés*, C. R. Acad. Sci. Paris Sér. I Math. **332** (2001), no. 9, 789–794, DOI 10.1016/S0764-4442(01)01946-2, available at `arXiv:math/0012175` (French, with English and French summaries). MR1836087

[10] Laurent Bartholdi and Zoran Šunik, *On the word and period growth of some groups of tree automorphisms*, Comm. Algebra **29** (2001), no. 11, 4923–4964, DOI 10.1081/AGB-100106794, available at `arXiv:math/0005113`. MR1856923 (2002i:20040)

[11] Laurent Bartholdi and Tullio G. Ceccherini-Silberstein, *Salem numbers and growth series of some hyperbolic graphs*, Geom. Dedicata **90** (2002), 107–114, DOI 10.1023/A:1014902918849, available at `arXiv:math/9910067`. MR1898155 (2003b:20060)

[12] Laurent Bartholdi and Rostislav I. Grigorchuk, *On parabolic subgroups and Hecke algebras of some fractal groups*, Serdica Math. J. **28** (2002), no. 1, 47–90, available at `arXiv:math/9911206`. MR1899368 (2003c:20027)

[13] Laurent Bartholdi and Tullio G. Ceccherini-Silberstein, *Growth series and random walks on some hyperbolic graphs*, Monatsh. Math. **136** (2002), no. 3, 181–202, DOI 10.1007/s006050200043, available at `arXiv:math/0109069`. MR1919644 (2003g:60010)

[14] Laurent Bartholdi, *A Wilson group of non-uniformly exponential growth*, C. R. Math. Acad. Sci. Paris **336** (2003), no. 7, 549–554, DOI 10.1016/S1631-073X(03)00131-6, available at `arXiv:math/0210471` (English, with English and French summaries). MR1981466 (2004c:20051)

[15] ———, *Endomorphic presentations of branch groups*, J. Algebra **268** (2003), no. 2, 419–443, DOI 10.1016/S0021-8693(03)00268-0, available at `arXiv:math/0007062`. MR2009317 (2004h:20044)

[16] Laurent Bartholdi, Rostislav I. Grigorchuk, and Zoran Šunik, *Branch groups*, Handbook of algebra, Vol. 3, North-Holland, Amsterdam, 2003, pp. 989–1112, DOI 10.1016/S1570-7954(03)80078-5, available at `arXiv:math/0510294`. MR2035113 (2005f:20046)

[17] Laurent Bartholdi, Rostislav Grigorchuk, and Volodymyr Nekrashevych, *From fractal groups to fractal sets*, Fractals in Graz 2001, Trends Math., Birkhäuser, Basel, 2003, pp. 25–118, available at `arXiv:math/0202001`. MR2091700 (2005h:20056)

[18] Laurent Bartholdi, *The 2-dimension series of the just-nonsolvable BSV group*, New Zealand J. Math. **33** (2004), no. 1, 17–23, available at `arXiv:math/0104076`. MR2066313 (2005f:20063)

[19] ———, *Cactus trees and lower bounds on the spectral radius of vertex-transitive graphs*, Random walks and geometry, Walter de Gruyter GmbH & Co. KG, Berlin, 2004, pp. 349–361, available at `arXiv:math/0112108`. MR2087788 (2005h:60130)

[20] Laurent Bartholdi and Wolfgang Woess, *Spectral computations on lamplighter groups and Diestel-Leader graphs*, J. Fourier Anal. Appl. **11** (2005), no. 2, 175–202, DOI 10.1007/s00041-005-3079-0, available at `arXiv:math/0405182`. MR2131635 (2006e:20052)

[21] Laurent Bartholdi and Bálint Virág, *Amenability via random walks*, Duke Math. J. **130** (2005), no. 1, 39–56, DOI 10.1215/S0012-7094-05-13012-5, available at `arXiv:math/0305262`. MR2176547 (2006h:43001)

[22] Laurent Bartholdi, *Lie algebras and growth in branch groups*, Pacific J. Math. **218** (2005), no. 2, 241–282, DOI 10.2140/pjm.2005.218.241, available at `arXiv:math/0101222`. MR2218347 (2007k:20069)

[23] Laurent Bartholdi and Said N. Sidki, *The automorphism tower of groups acting on rooted trees*, Trans. Amer. Math. Soc. **358** (2006), no. 1, 329–358 (electronic), DOI 10.1090/S0002-9947-05-03712-8, available at `arXiv:math/0308127`. MR2171236 (2006i:20036)

[24] L. Bartholdi, I. I. Reznykov, and V. I. Sushchansky, *The smallest Mealy automaton of intermediate growth*, J. Algebra **295** (2006), no. 2, 387–414, DOI 10.1016/j.jalgebra.2004.08.040, available at `arXiv:math/0407312`. MR2194959 (2006i:68060)

[25] Laurent Bartholdi and Zoran Šunik, *Some solvable automaton groups*, Topological and asymptotic aspects of group theory, Contemp. Math., vol. 394, Amer. Math. Soc., Providence, RI, 2006, pp. 11–29, DOI 10.1090/conm/394/07431, available at `arXiv:math/0603032`. MR2216703 (2007e:20053)

[26] Laurent Bartholdi and Yves de Cornulier, *Infinite groups with large balls of torsion elements and small entropy*, Arch. Math. (Basel) **87** (2006), no. 2, 104–112, DOI 10.1007/s00013-005-1684-4, available at `arXiv:math/0510141`. MR2249644 (2007f:20065)

[27] Laurent Bartholdi, *Branch rings, thinned rings, tree enveloping rings*, Israel J. Math. **154** (2006), 93–139, available at `arXiv:math.RA/0410226`. MR2254535 (2007k:20051)

[28] Laurent Bartholdi, André G. Henriques, and Volodymyr V. Nekrashevych, *Automata, groups, limit spaces and tilings*, J. Algebra **305** (2006), no. 2, 629–663, DOI 10.1016/j.jalgebra.2005.10.022, available at `arXiv:math/0412373`. MR2266846 (2008a:20070)

[29] Laurent Bartholdi, Benjamin Enriquez, Pavel Etingof, and Eric Rains, *Groups and Lie algebras corresponding to the Yang-Baxter equations*, J. Algebra **305** (2006), no. 2, 742–764, DOI 10.1016/j.jalgebra.2005.12.006, available at `arXiv:math.RA/0509661`. MR2266850 (2007g:17010)

[30] Laurent Bartholdi and Volodymyr V. Nekrashevych, *Thurston equivalence of topological polynomials*, Acta Math. **197** (2006), no. 1, 1–51, DOI 10.1007/s11511-006-0007-3, available at `arXiv:math.DS/0510082`. MR2285317 (2008c:37072)

[31] Laurent Bartholdi and Michael R. Bush, *Maximal unramified 3-extensions of imaginary quadratic fields and* $\mathrm{SL}_2(\mathbb{Z}_3)$, J. Number Theory **124** (2007), no. 1, 159–166, DOI 10.1016/j.jnt.2006.08.008, available at `arXiv:math/0602.5364`. MR2320997 (2008c:11153)

[32] Laurent Bartholdi and Illya Reznykov, *A Mealy machine with polynomial growth of irrational degree*, Internat. J. Algebra Comput. **18** (2008), no. 1, 1–24, DOI 10.1142/S0218196708004287, available at `arXiv:math/0506203`. MR2394721 (2009b:68087)

[33] Laurent Bartholdi and Volodymyr V. Nekrashevych, *Iterated Monodromy Groups of Quadratic Polynomials, I*, Groups Geom. Dyn. **2** (2008), no. 3, 309–336, DOI 10.4171/GGD/42, available at `arXiv:math/0611177`. MR2415302 (2009d:37074)

[34] Laurent Bartholdi, Markus Neuhauser, and Wolfgang Woess, *Horocyclic products of trees*, J. Eur. Math. Soc. (JEMS) **10** (2008), 771–816, DOI 10.4171/JEMS/130, available at `arXiv:math/0601417`. MR2421161 (2009m:05081)

[35] Laurent Bartholdi, *On amenability of group algebras, I*, Isr. J. Math. **168** (2008), 153–165, DOI 10.1007/s11856-008-1061-7, available at `arXiv:math/0608302`. MR2448055 (2010a:43001)

[36] Laurent Bartholdi, Bettina Eick, and René Hartung, *A nilpotent quotient algorithm for certain infinitely presented groups and its applications*, Internat. J. Algebra Comput. **18** (2008), no. 8, 1321–1344, DOI 10.1142/S0218196708004871, available at `arXiv:math/0706.3131`. MR2483125 (2010h:20002)

[37] Laurent Bartholdi and Floriane Pochon, *On growth and torsion of groups*, Groups Geom. Dyn. **3** (2009), no. 4, 525–539, DOI 10.4171/GGD/68, available at `arXiv:math/0712.4005`. MR2529946 (2011b:20128)

[38] Laurent Bartholdi, *Self-similarity in group theory and algebra*, Symmetries in algebra and number theory (SANT), Universitätsverlag Göttingen, Göttingen, 2009, pp. 1–10. MR2882561

[39] ———, *Gardens of Eden and amenability on cellular automata*, J. Eur. Math. Soc. (JEMS) **12** (2010), no. 1, 241–248, DOI 10.4171/JEMS/196, available at `arXiv:math/0709.4280`. MR2578610 (2011e:05282)

[40] Laurent Bartholdi and Pierre de la Harpe, *Representation zeta functions of wreath products with finite groups*, Groups Geom. Dyn. **4** (2010), no. 2, 209–249, DOI 10.4171/GGD/81, available at `arXiv:math/0809.0131`. MR2595090 (2011h:20010)

[41] Laurent Bartholdi and Olivier Siegenthaler, *The twisted twin of the Grigorchuk group*, Internat. J. Algebra Comput. **20** (2010), no. 4, 465–488, DOI 10.1142/S0218196710005728, available at `arXiv:math/0904.1600`. MR2665774 (2011g:20031)

[42] Laurent Bartholdi, Vadim A. Kaimanovich, and Volodymyr V. Nekrashevych, *On amenability of automata groups*, Duke Math. J. **154** (2010), no. 3, 575–598, DOI 10.1215/00127094-2010-046, available at `arXiv:math/0802.2837`. MR2730578 (2011k:20048)

[43] Laurent Bartholdi and Oleg Bogopolski, *On abstract commensurators of groups*, J. Group Theory **13** (2010), no. 6, 903–922, DOI 10.1515/JGT.2010.021, available at `arXiv:math/0902.4542`. MR2736164 (2011k:20079)

[44] Laurent Bartholdi, Olivier Siegenthaler, and Pavel A. Zalesskii, *The congruence subgroup problem for branch groups*, Isr. J. Math **187** (2012), 419–450, DOI 10.1007/s11856-011-0086-5, available at `arXiv:math/0902.3220`. MR2891709

[45] Laurent Bartholdi, Thomas Schick, Nat Smale, and Steve Smale, *Hodge theory on metric spaces*, Found. Comput. Math. **12** (2012), no. 1, 1–48, DOI 10.1007/s10208-011-9107-3, available at `arXiv:math/0912.0284`. Appendix B by Anthony W. Baker. MR2886155

[46] Laurent Bartholdi and Anna G. Erschler, *Growth of permutational extensions*, Invent. Math. **189** (2012), no. 2, 431–455, DOI 10.1007/s00222-011-0368-x, available at `arXiv:math/1011.5266`. MR2947548

[47] Glenn C. Rhoads and Laurent Bartholdi, *Computer Solution to the Game of Pure Strategy*, Games **3** (2012), no. 4, 150–156, DOI 10.3390/g3040150, available at `arXiv:cs/1202.0695`.

[48] Laurent Bartholdi and André G. Henriques, *Orange peels and Fresnel integrals*, Math. Intelligencer **34** (2012), no. 3, 1–3, DOI 10.1007/s00283-012-9304-1, available at `arXiv:math/1202.3033`. MR2973515

[49] Laurent Bartholdi, *(Self-)similar groups and the Farrell–Jones conjectures*, Groups Geom. Dyn. **7** (2013), no. 1, 1–11, DOI 10.4171/GGD/175, available at `arXiv:math/1107.5339`. MR3019074

[50] Agata Smoktunowicz and Laurent Bartholdi, *Jacobson radical non-nil algebras of Gel'fand-Kirillov dimension 2*, Israel J. Math. **194** (2013), no. 2, 597–608, DOI 10.1007/s11856-012-0073-5, available at `arXiv:math/1102.2697`. MR3047084

[51] Laurent Bartholdi, *Automorphisms of free groups. I*, New York J. Math **19** (2013), 395–421, available at `arXiv:math/1304.0498`. MR3084710

[52] Laurent Bartholdi and Agata Smoktunowicz, *Images of Golod-Shafarevich algebras with small growth*, Q. J. Math. **65** (2014), no. 2, 421–438, DOI 10.1093/qmath/hat005, available at `arXiv:math/1108.4267`. MR3230369

[53] Laurent Bartholdi and Anna G. Erschler, *Imbeddings into groups of intermediate growth*, Groups Geom. Dyn. **8** (2014), no. 3, 605–620, DOI 10.4171/GGD/241, available at `arXiv:math/1403.5584`. MR3267517

[54] ———, *Groups of given intermediate word growth*, Ann. Inst. Fourier **64** (2014), no. 5, 2003–2036, available at `arXiv:math/1110.3650`.

[55] Laurent Bartholdi, Xavier Buff, Hans-Christian Graf von Bothmer, and Jakob Kröker, *Algorithmic construction of Hurwitz maps*, Experimental Mathematics **24** (2015), 76–92, DOI 10.1080/10586458.2013.860569, available at `arXiv:math/1303.1579`.

Books and conference proceedings edited or reviewed

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Service activities

2011– : curator of the model collection of the University of Göttingen
2011– : member of the GAP council
2005– : Editorial board of "Quadrature"
2015 : member of the scientific committee of GAGTA-9 at CIRM, Marseille
2014 : one of the main organizers of the workshop "Holomorphic and symbolic dynamics" in Toulouse
2012 : main organizer of the walkshop "Groups in action" in the Vercors mountains, France
2011 : one of the main organizers of the summer school "Göttingen-Penn State International Summer School on Dynamical Systems" in Göttingen, Germany
2011 : main organizer of the walkshop "Groups in action" in the Harz mountains, Germany
2009 : one of main organizers of the symposium in honour of Vadim A. Kaimanovich, in Bremen, Germany
2007 : main organizer of workshop "Profinite groups and residually finite groups" in the Swiss alps
2005 : one of main organizers of the conference "Asymptotic and Probabilistic methods in Group theory" in Geneva, Switzerland
2004 : main organizer of workshop "Around groups acting on trees" in Villars, Switzerland
2003 : one of main organizers of the conference "Groups 2003" in Gaeta, Italy
1999 : co-organizer of conference "Groupes finis" in Geneva, Switzerland

Hobbies and Interests

Plays the piano, the trumpet and the swiss alphorn.
Plays bridge (participated in the world junior championships) and chess (participated twice in the junior Swiss championships)
Trained the Swiss team for the International Mathematical Olympiad from 1994 to 1997 (and accompanied the team in Toronto in 1995)