

ARZHANTSEVA Goul'nara

Born on November 28, 1973. www.mat.univie.ac.at/~arjantseva/

Professional experience

- 2010 – *Full Professor of Algebra*, University of Vienna
- 2011 – 2015 Deputy Director, Erwin Schrödinger International Institute
- 2008 – 2010 Associate professor, University of Neuchâtel
- 2003 – 2008 Professorship of the Swiss National Science Foundation, University of Geneva
- 2001 – 2003 Senior research assistant - Maître assistante, University of Geneva
- 1998 – 2001 Post-doctoral position with P. de la Harpe, University of Geneva

Education

- 1995 – 1998 Moscow Lomonosov State University, PhD in Mathematics
Title: *Generic properties of finitely presented groups*
Advisor: Alexander Yu. Ol'shanskii
Specialization: (i) algebra, number theory, logic; (ii) algebraic topology
- 1990 – 1995 Moscow Lomonosov State University, Diploma in mathematics
Specialization: mathematics and applied mathematics
- 1989 – 1990 Specialized Kolmogorov's school in mathematics, Moscow State University

5 selected visiting positions (1 – 6 months)

- 2015 / 2014 Researcher, Mathematical Institute, University of Oxford, UK
- 2012 Researcher, FIM - Institute for Mathematical Research, ETH Zürich, Switzerland
- 2010 / 2007 Director of research (CNRS) / Professor, University of Aix-Marseille, France
- 2007 Professor, Bernoulli Research Center, EPF Lausanne, Switzerland
- 2016 / 2007 Researcher, Mathematical Sciences Research Institute, Berkeley, USA

5 selected invited plenary lectures and courses

- 2017 Institute for Advanced Study, Princeton, USA – minicourse
- 2017 Clay Mathematics Institute, University of Oxford, UK – minicourse
- 2017 / 2014 Institut Henri Poincaré, Paris, France
- 2015 / 2010 Centre International de Rencontres Mathématiques, Luminy, France
- 2007 / 2005 EPF Lausanne, Switzerland – two semester courses

5 selected reviewer and editorial activities

- Since* 2019 Editor of the Journal of Topology and Analysis
- 2016 Editor of the Journal of Combinatorial Algebra
- 2014 Referee for the Swiss National Science Foundation, Switzerland
- 2011 Referee for the U.S.-Israel Binational Science Foundation
- 2019 / 2010 Panel member (a major panel) / Panel member (a thematic panel) / Referee for the National Science Foundation, USA

Scientific governance

- Since* 2015 Scientific steering committee of the University of Aix-Marseille, France
- 2015 Advisory board of the Center of excellence (LabEx Archimède), Marseille, France
- 2011 – 2015 Kollegium of the Erwin Schrödinger International Institute, Vienna, Austria

Main area of research

Infinite graphs and groups: geometric, combinatorial, analytic, algorithmic, and asymptotic aspects
 Randomness in graphs and groups, automata, group C^* -algebras, low-dimensional topology

Publications (all refereed)

41 papers in internat. journals, 2 books co-edited, 2 papers in proceedings volumes, 1 e-course

Research supervision

25 Postdoctoral fellows, 6 PhD thesis

External examiner

15 Habilitation thesis, 10 PhD thesis

Research programme (co-)organizer

- 2017 Isaac Newton Institute for Mathematical Sciences, Cambridge, UK
Non-positive curvature: group actions and cohomology, 1 semester
- 2016 Erwin Schrödinger International Institute, Vienna, Austria
Measured group theory, 1 trimester
- 2007 Bernoulli Research Center, EPF Lausanne, Switzerland
Limits of graphs in group theory and computer science, 1 semester

International conference and seminar (co-)organizer

18 conferences, workshops, schools in *algebra*, *geometry*, and *analysis* on groups since 2002
 I have co-lead a monthly Swiss-Austrian research seminar on *Sofic groups*, 2010 – 2013
 Currently, I lead a weekly research seminar on *Geometry and analysis on groups*, 2010 –

5 selected hiring and promotion committees

- 2018 / 2017 Professor positions / Tenure-track positions, Vienna, Austria, *Member*
- 2016 Professor position, Marseille, France, *External member*
- 2014 Professor position, Strasbourg, France, *External member*
- 2013 Professor position, Vienna, Austria, *Vice-President*
- 2011 Promotion committee, Oxford, UK, *External expert*

Awards and fellowships (for research grants, see Funding ID below)

- 2022 Sorbonne University Visiting Professorship
- 2022 Heilbronn Distinguished Visiting Professorship
- 2017 Simons Foundation fellowship
- 1998 International Soros Science Program grant award
- 1990 – 1998 Moscow Lomonosov State University competitive fellowships
- 1995 Red diploma of Moscow Lomonosov State University, award

Honours

My results were presented at the Bourbaki Seminar in October, 2018
 The first woman Full Professor of Mathematics at the University of Vienna since its creation in 1365

Languages

English (fluent), French (fluent as native)
 German (basic, teaching in German since 2014), Russian (native)

Funding ID, a complete list is available upon request

Fundings as a Principal Investigator (PI), 5 selected projects:

Agency, grant type	Project title	Period	Amount	Partners
European Research Council, research grant	<i>Analytic properties of infinite groups</i>	2011 – 2016	1 065 500 €	PI, 4 team members
Swiss NSF, Sinergia research network	<i>Sofic groups: algebra, analysis, and dynamics</i>	2010 – 2013	841 014 CHF	co-PI, 3 universit.
European Commission, Marie Curie research training networks	<i>Geometric, analytic and ergodic aspects of group theory</i>	2007 – 2009	523 000 €	PI, 6 universi-ties
Swiss NSF, Professorship	<i>Geometric, asymptotic, and analytic aspects of infinite groups</i>	2007 – 2008	255 898 CHF	PI, super- vision of 3 researchers
Swiss NSF, Professorship	<i>Geometry of groups and asymptotic invariants</i>	2003 – 2007	1 138 624 CHF	PI, super- vision of 4 researchers

Fundings as a Principal Investigator (PI), 5 selected programmes and workshops:

Research Institute	Workshop title	Period	Amount	Partners
Newton Institute, research semester	<i>Non-positive curvature: group actions and cohomology</i>	2017	$\geq 300\,000$ €	PI, 3 co-organizers
Erwin Schrödinger Institute, research trimester	<i>Measured group theory</i>	2016	$\geq 50\,000$ €	PI, 4 co-organizers
Bernoulli Research Center, EPF Lausanne research semester	<i>Limits of graphs in group theory and computer science</i>	2007	$\geq 112\,000$ €	PI, 2 co-organizers
Mathematisches Forschungsinstitut Oberwolfach, workshop	<i>Finite-dimensional approximations of discrete groups</i>	2011	\geq full board for 28 participants	PI, 2 co-organizers
Centro Stefano Franscini, ETH Zürich, workshop	<i>Affine isometric actions of discrete groups</i>	2009	\geq full board for 50 participants	PI, 1 co-organizer

3 key academic achievements

Impact on the research community: ~ 900 citations

Supervising and mentoring: 25 postdoc fellows, 6 PhD thesis, 5 visiting PhD, 8 Masters

Leading ambitious projects and programmes: SNSF professorship, EPFL programme, ERC grant

LIST OF PUBLICATIONS

Papers already published or accepted:

- [1] G. Arzhantseva, M. Steenbock, *Rips construction without unique product*, Pacific Journal of Mathematics, (2022), in press.
[arXiv:1407.2441](https://arxiv.org/abs/1407.2441).
- [2] G. Arzhantseva, A. Biswas, *Logarithmic girth expander graphs of $SL_n(\mathbb{F}_p)$* , Journal of Algebraic Combinatorics, 56 (2022), 691–723
[10.107/s10801-022-01128-z](https://doi.org/10.107/s10801-022-01128-z)
- [3] G. Arzhantseva, M. Hagen, *Acyindrical hyperbolicity of cubical small-cancellation groups*, Algebraic & Geometric Topology, 22(5) (2022), 2007–2078
[10.2140/agt.2022.22.2007](https://doi.org/10.2140/agt.2022.22.2007)
- [4] G. Arzhantseva, S. Gal, *On approximation properties of semidirect products of groups*, Annales mathématiques Blaise Pascal, 27(1) (2020), 125–130
[10.5802/ambp.386](https://doi.org/10.5802/ambp.386)
- [5] G. Arzhantseva, F. Berlai, M. Finn-Sell, L. Glebsky, *Unrestricted wreath products and sofic groups*, International Journal of Algebra and Computation, 29 (2) (2019), 343–355
[doi:10.1142/S021819671950005X](https://doi.org/10.1142/S021819671950005X)
- [6] G. Arzhantseva, Ch. Cashen, *Cogrowth for group actions with strongly contracting elements*, Ergodic Theory and Dynamical Systems, 40(7) (2020), 1738–1754
[doi:10.1017/etds.2018.123](https://doi.org/10.1017/etds.2018.123)
- [7] G. Arzhantseva, L. Păunescu, *Constraint metric approximations and equations in groups*, Journal of Algebra, 516 (2018), 329–351
[doi:10.1016/j.jalgebra.2018.09.007](https://doi.org/10.1016/j.jalgebra.2018.09.007)
- [8] G. Arzhantseva, C. Druțu, *Geometry of infinitely presented small cancellation groups and quasi-homomorphisms*, Canadian Journal of Mathematics, 71(5) (2019), 997–1018
[doi:10.4153/CJM-2018-036-7](https://doi.org/10.4153/CJM-2018-036-7)
- [9] G. Arzhantseva, Ch. Cashen, D. Gruber, D. Hume, *Negative curvature in graphical small cancellation groups*, Groups, Geometry and Dynamics, 13(2) (2019), 579–632
[doi: 10.4171/GGD/498](https://doi.org/10.4171/GGD/498)
- [10] G. Arzhantseva, R. Tessera, *Admitting a coarse embedding is not preserved under group extensions*, International Mathematics Research Notices, 2019 (20) (2019), 6480–6498
[doi:10.1093/imrn/rny017](https://doi.org/10.1093/imrn/rny017)
- [11] G. Arzhantseva, G. Niblo, N. Wright, J. Zhang, *A characterization for asymptotic dimension growth*, Algebraic & Geometric Topology, 18 (2018), 493–524
[doi:10.2140/agt.2018.18.493](https://doi.org/10.2140/agt.2018.18.493)
- [12] G. Arzhantseva, Ch. Cashen, D. Gruber, D. Hume, *Characterizations of Morse quasi-geodesics via superlinear divergence and sublinear contraction*, Documenta Mathematica, 22 (2017), 1193–1224
[doi: 10.25537/dm.2017v22.1193-1224](https://doi.org/10.25537/dm.2017v22.1193-1224)
- [13] G. Arzhantseva, L. Păunescu, *Linear sofic groups and algebras*, Transactions of the American Mathematical Society, 369 (2017), 2285–2310
[doi:10.1090/tran/6706](https://doi.org/10.1090/tran/6706)

- [14] G. Arzhantseva, Ch. Cashen, J. Tao, *Growth tight actions*, Pacific Journal of Mathematics, 278(1) (2015), 1–49
[doi:10.2140/pjm.2015.278.1](https://doi.org/10.2140/pjm.2015.278.1)
- [15] G. Arzhantseva, L. Păunescu, *Almost commuting permutations are near commuting permutations*, Journal of Functional Analysis, 269(3) (2015), 745–757
[doi:10.1016/j.jfa.2015.02.013](https://doi.org/10.1016/j.jfa.2015.02.013)
- [16] G. Arzhantseva, D. Osajda, *Infinitely presented small cancellation groups have Haagerup property*, Journal of Topology and Analysis, 07(03) (2015), 389–406
[doi:10.1142/S1793525315500144](https://doi.org/10.1142/S1793525315500144)
- [17] G. Arzhantseva, R. Tessera, *Relative expanders*, Geometric and Functional Analysis [GAFA], 25 (2015), 317–341
[doi:10.1007/s00039-015-0316-9](https://doi.org/10.1007/s00039-015-0316-9)
- [18] G. Arzhantseva, *Asymptotic approximations of finitely generated groups*, Research Perspectives CRM Barcelona-Fall 2012 (Trends in Mathematics), Birkhäuser, Basel, vol. 1, 2014, 5–12
[doi:10.1007/978-3-319-05488-9_2](https://doi.org/10.1007/978-3-319-05488-9_2)
- [19] G. Arzhantseva, J.-F. Lafont, A. Minasyan, *Isomorphism versus commensurability for a class of finitely presented groups*, Journal of Group Theory, 17(2) (2014), 361–378
[doi:10.1515/jgt-2013-0050](https://doi.org/10.1515/jgt-2013-0050)
- [20] G. Arzhantseva, E. Guentner, J. Spakula, *Coarse non-amenability and coarse embeddings*, Geometric and Functional Analysis [GAFA], 22(1) (2012), 22–36
[doi:10.1007/s00039-012-0145-z](https://doi.org/10.1007/s00039-012-0145-z)
- [21] G. Arzhantseva, E. Guentner, *Coarse non-amenability and covers with small eigenvalues*, Mathematische Annalen, 354(3) (2012), 863–870
[doi:10.1007/s00208-011-0759-8](https://doi.org/10.1007/s00208-011-0759-8)
- [22] G. Arzhantseva, M. Bridson, T. Januszkiewicz, I. Leary, A. Minasyan, J. Swiatkowski, *Infinite groups with fixed point properties*, Geometry and Topology, 13 (2009), 1229–1263
[doi:10.2140/gt.2009.13.1229](https://doi.org/10.2140/gt.2009.13.1229)
- [23] G. Arzhantseva, C. Druţu, and M. Sapir, *Compression functions of uniform embeddings of groups into Hilbert and Banach spaces*, Journal für die Reine und Angewandte Mathematik, [Crelle’s Journal], 633 (2009), 213–235
[doi:10.1515/CRELLE.2009.066](https://doi.org/10.1515/CRELLE.2009.066)
- [24] G. Arzhantseva, V. Guba, M. Lustig and J.-Ph. Préaux, *Testing Cayley graph densities*, Annales mathématiques Blaise Pascal, 15(2) (2008), 169–221
[doi:10.5802/ambp.249](https://doi.org/10.5802/ambp.249)
- [25] G. Arzhantseva, A. Minasyan and D. Osin, *The SQ-universality and residual properties of relatively hyperbolic groups*, Journal of Algebra, 315(1) (2007), 165–177
[doi:10.1016/j.jalgebra.2007.04.029](https://doi.org/10.1016/j.jalgebra.2007.04.029)
- [26] G. Arzhantseva, Z. Sunic, *Construction of elements in the closure of Grigorchuk group*, Geometriae Dedicata, 124(1) (2007), 17–26
[doi:10.1007/s10711-006-9103-y](https://doi.org/10.1007/s10711-006-9103-y)
- [27] G. Arzhantseva, A. Minasyan, *Relatively hyperbolic groups are C*-simple*, Journal of Functional Analysis, 243(1), (2007), 345–351
[doi:10.1016/j.jfa.2006.06.003](https://doi.org/10.1016/j.jfa.2006.06.003)

- [28] G. Arzhantseva, P. de la Harpe and D. Kahrobaei, *The true prosoluble completion of a group: Examples and open problems*, Geometriae Dedicata, 124(1) (2007), 5–17
[doi:10.1007/s10711-006-9103-y](https://doi.org/10.1007/s10711-006-9103-y)
- [29] G. Arzhantseva, V. Guba, M. Sapir, *Metrics on diagram groups and uniform embeddings in a Hilbert space*, Commentarii Mathematici Helvetici, 81(4), (2006), 911–929
[doi:10.4171/cmh/80](https://doi.org/10.4171/cmh/80)
- [30] G. Arzhantseva, *A dichotomy for finitely generated subgroups of word hyperbolic groups*, Contemporary Mathematics, 394, Amer. Math.Soc., Providence, RI, 2006, 1–11
[doi:10.1090/conm/394/07430](https://doi.org/10.1090/conm/394/07430)
- [31] G. Arzhantseva and I. Lysenok, *A lower bound on the growth of word hyperbolic groups*, Journal of the London Mathematical Society, (2) 73 (2006), 109–125
[doi:10.1112/S002461070502257X](https://doi.org/10.1112/S002461070502257X)
- [32] G. Arzhantseva, V. Guba, L. Guyot, *Growth rates of amenable groups*, Journal of Group Theory, 8 (2005), no. 3, 389–394
[doi:10.1515/jgth.2005.8.3.389](https://doi.org/10.1515/jgth.2005.8.3.389)
- [33] G. Arzhantseva, J. Burillo, M. Lustig, L. Reeves, H. Short, E. Ventura, *Uniform non-amenability*, Advances in Mathematics, 197 (2005), no. 2, 499–522
[doi:10.1016/j.aim.2004.10.013](https://doi.org/10.1016/j.aim.2004.10.013)
- [34] G. Arzhantseva and P.-A. Cherix, *On the Cayley graph of a generic finitely presented group*, Bulletin of the Belgian Mathematical Society, 11 (2004), no. 4, 589–601
[doi:10.36045/bbms/1102689123](https://doi.org/10.36045/bbms/1102689123)
- [35] G. Arzhantseva and I. Lysenok, *Growth tightness for word hyperbolic groups*, Mathematische Zeitschrift, 241 (2002), no. 3, 597–611
[doi:10.1007/s00209-002-0434-6](https://doi.org/10.1007/s00209-002-0434-6)
- [36] G. Arzhantseva and D.V. Osin, *Solvable groups with polynomial Dehn functions*, Transactions of the American Mathematical Society, 354 (2002), 3329–3348
[doi:10.1090/S0002-9947-02-02985-9](https://doi.org/10.1090/S0002-9947-02-02985-9)
- [37] G. Arzhantseva, *On quasiconvex subgroups of word hyperbolic groups*, Geometriae Dedicata, 87 (2001), 191–208
[doi:10.1023/A:1012040207144](https://doi.org/10.1023/A:1012040207144)
- [38] G. Arzhantseva, *A property of subgroups of infinite index in a free group*, Proceedings of the American Mathematical Society, 128 (11) (2000), 3205–3210
[doi:10.1090/S0002-9939-00-05508-8](https://doi.org/10.1090/S0002-9939-00-05508-8)
- [39] G. Arzhantseva, *Generic properties of finitely presented groups and Howson’s Theorem*, Communications in Algebra, 26 (11) (1998), 3783–3792
[doi:10.1080/00927879808826374](https://doi.org/10.1080/00927879808826374)
- [40] G. Arzhantseva, *On the groups all of whose subgroups with fixed number of generators are free*, Fundamental and Applied Mathematics, 3(3) (1997), 675–683.
- [41] G. Arzhantseva, A. Yu. Ol’shanskii, *Generality of the class of groups in which subgroups with a lesser number of generators are free*, Mathematical Notes, 59(3–4) (1996), 350–355,
[doi:10.1007/BF02308683](https://doi.org/10.1007/BF02308683)
- [42] G. Arzhantseva, *Generic properties of finitely presented groups*, PhD thesis, Moscow Lomonosov State University, December 1998.

Books (edited):

[43] G. Arzhantseva, A. Valette (eds.), *Limits of graphs in group theory and computer science*, Fundamental Sciences, EPFL Press, Lausanne, 2009, 305 pp, ISBN: 978-1-4398-0400-1.

[44] G. Arzhantseva, L. Bartholdi, J. Burillo, and E. Ventura (eds.), *Geometric group theory*, Trends in Mathematics, Birkhäuser Verlag, Basel, 2007, 253 pp., ISBN: 978-3-7643-8411-1.

Submitted papers and preprints:

[45] G. Arzhantseva, D. Kielak, T. de Laat, and D. Sawicki, *Origami expanders*, [arXiv:2112.11864](https://arxiv.org/abs/2112.11864).

[46] G. Arzhantseva, D. Osajda, *Graphical small cancellation groups with the Haagerup property*, [arXiv:1404.6807](https://arxiv.org/abs/1404.6807).

[47] G. Arzhantseva, C. Druţu, *Geometry of infinitely presented small cancellation groups, Rapid Decay and quasi-homomorphisms*, [arXiv:1212.5280](https://arxiv.org/abs/1212.5280).

[48] G. Arzhantseva, T. Delzant, *Examples of random groups*, (2008), [available](#) on the authors' websites.

[49] G. Arzhantseva, P.-A. Cherix, *Quantifying metric approximations of discrete groups*, [arXiv:2008.12954](https://arxiv.org/abs/2008.12954).

[50] G. Arzhantseva, *An algorithm detecting Dehn presentations*, (2000), [preprint](#), University of Geneva.

Proceedings / e-tutorial:

[51] G. Arzhantseva, J. Díaz, J. Petit, J.D.P. Rolim, and M. Serna, *Broadcasting on networks of sensors communicating through directional antennas*, Ambient Intelligence Computing, 1–12, Proceedings, CTI Press and Ellinika Grammata, 2003.

[52] G. Arzhantseva, J.D.P. Rolim, *Considerations for a geometric model of the web*, Approximation and Randomization Algorithms in Communication Networks, Rome, 2002, 1–11, Proceedings, Carleton Scientific.

[53] G. Arzhantseva, J.D.P. Rolim, *Computability and Complexity*, e-learning theoretical course of the [Virtual Logic Laboratory](#) (a project of the [Swiss Virtual Campus](#)), 90 pp. (e-tutorial).

Short communications:

[54] G. Arzhantseva, A. Thom, A. Valette (eds.), *Finite-dimensional approximations of discrete groups*, Oberwolfach Rep., 8(2) (2011), 1429–1467.

[55] G. Arzhantseva, *Uniform embeddings of groups into a Hilbert space*, in I. Hambleton, E. Pedersen, A. Ranicki, H. Reich (eds.), *Manifold perspectives*, Oberwolfach Rep., 6(2) (2009), 1527–1529.

[56] G. Arzhantseva, *The uniform Kazhdan property for $SL_n(\mathbb{Z})$, $n \geq 3$* , l'Enseignement Mathématique 54(2) (2008), 12.

[57] G. Arzhantseva, *The entropy of a group endomorphism*, in G. Knieper, L. Polterovich, L. Potyagailo (eds.), *Geometric group theory, hyperbolic dynamics and symplectic geometry*, Oberwolfach Rep., 33 (2006), 2044–2045.