

## A list of publications by A. B. Skopenkov (excluding abstracts).

### 1. Main research papers.

- [Sk95] A. Skopenkov, *A description of continua basically embeddable in  $\mathbb{R}^2$* , Topol. Appl. **65** (1995), 29–48.
- [RSS96] D. Repovš, A. B. Skopenkov and E. V. Ščepin,  *$C^1$ -homogeneous compacta in  $\mathbb{R}^n$  are  $C^1$ -submanifolds of  $\mathbb{R}^n$* , Proc. Amer. Math. Soc. **124:4** (1996), 1219–1226.
- [Sk97] A. B. Skopenkov, *On the deleted product criterion for embeddability of manifolds in  $\mathbb{R}^m$* , Comment. Math. Helv. **72** (1997), 543–555.
- [Sk98] A. B. Skopenkov, *On the deleted product criterion for embeddability in  $\mathbb{R}^m$* , Proc. Amer. Math. Soc. **126:8** (1998), 2467–2476.
- [RS98] D. Repovš and A. B. Skopenkov, *A deleted product criterion for approximability of a map by embeddings*, Topol. Appl. **87** (1998), 1–19.
- [SSS98] J. Segal, A. Skopenkov and S. Spiez, *Embeddings of polyhedra in  $\mathbb{R}^m$  and the deleted product obstruction*, Topol. Appl. **85** (1998), 225–234.
- [RS99] D. Repovš and A. Skopenkov, *New results on embeddings of polyhedra and manifolds into Euclidean spaces*, Uspekhi Mat. Nauk **54:6** (1999), 61–109 (in Russian); *English transl.*, Russ. Math. Surv., 1149–1196.
- [Sk00] A. Skopenkov, *On the generalized Massey–Rolfsen invariant for link maps*, Fund. Math. **165** (2000), 1–15.
- [Sk02] A. Skopenkov, *On the Haefliger–Hirsch–Wu invariants for embeddings and immersions*, Comment. Math. Helv. **77** (2002), 78–124.
- [Sk07] A. Skopenkov, *A new invariant and parametric connected sum of embeddings*, Fund. Math. **197** (2007), 253–269; arxiv:math/0509621.
- [Sk08] A. Skopenkov, *Embedding and knotting of manifolds in Euclidean spaces, in: Surveys in Contemporary Mathematics, Ed. N. Young and Y. Choi*, London Math. Soc. Lect. Notes **347** (2008), 248–342; arxiv:math/0604045.
- [Sk08'] A. Skopenkov, *A classification of smooth embeddings of 3-manifolds in 6-space*, Math. Zeitschrift **260:3** (2008), 647–672; arxiv:math/0603429.
- [Sk10] A. Skopenkov, *A classification of smooth embeddings of 4-manifolds in 7-space, I*, Topol. Appl. **157** (2010), 2094–2110; arxiv:math/0512594.
- [Sk10'] A. Skopenkov, *Embeddings of  $k$ -connected  $n$ -manifolds into  $R^{2n-k-1}$* , Proc. Amer. Math. Soc. **138** (2010), 3377–3389; arxiv:0812.0263.
- [CS11] D. Crowley and A. Skopenkov, *A classification of smooth embeddings of 4-manifolds in 7-space, II*, Internat. J. Math. **22:6** (2011), 731–757; arxiv:0808.1795.
- [Sk14] A. Skopenkov, *How do autodiffeomorphisms act on embeddings*, Proc. A of the Royal Society of Edinburgh, to appear; arxiv:1402.1853.
- [Sk15] A. Skopenkov, *Classification of knotted tori*; arxiv:1502.04470.
- [AMSW] S. Avvakumov, I. Mabillard, A. Skopenkov and U. Wagner, *Eliminating Higher-Multiplicity Intersections, III. Codimension 2*, submitted; arxiv:1511.03501.
- [CS16] D. Crowley and A. Skopenkov, *Embeddings of non-simply-connected 4-manifolds in 7-space, I. Classification modulo knots*, submitted; arxiv:1611.04738.
- [CS16'] D. Crowley and A. Skopenkov, *Embeddings of non-simply-connected 4-manifolds in 7-space, II. On the smooth classification.*, submitted; arxiv:1612.04776.

### 2. Other research papers.

- [RSS93] D. Repovš, A. B. Skopenkov and E. V. Ščepin, *A characterization of  $C^1$ -homogeneous subsets of the plane*, Boll. Unione Mat. Ital. **7-A** (1993), 437–444.
- [Sk94] A. Skopenkov, *A geometric proof of the Neuwirth theorem on thickenings of 2-polyhedra*, Mat. Zametki **56:2** (1994), 94–98 (in Russian); *English transl.*: Math. Notes, **58:5** (1995), 1244–1247.

- [RSS95] D. Repovš, A. B. Skopenkov and E. V. Ščepin, *On uncountable collections of continua and their span*, Colloq. Math. **69:2** (1995), 289–296.
- [RSS95'] D. Repovš, A. B. Skopenkov and E. V. Ščepin, *On embeddability of  $X \times I$  into Euclidean space*, Houston J. Math **21** (1995), 199–204.
- [RS95] D. Repovš and A. B. Skopenkov, *On homogeneous compacta in Euclidean space and the classical Hilbert–Smith conjecture*, in: Proc. of the Second Asian Math. Conf. (ed. S.Tangmanee, E.Schulz) (1995), 222–226.
- [RS96] D. Repovš and A. B. Skopenkov, *Embeddability and isotopy of polyhedra in Euclidean spaces*, Trudy Math. Inst. Ross. Akad. Nauk **212** (1996); Proc. of the Steklov Inst. Math. **212** (1996), 173–188.
- [RSS97] D. Repovš, A. B. Skopenkov and E. V. Ščepin, *Group actions on manifolds and smooth ambient homogeneity*, Jour. of Math. Sci. (New York) **83:4** (1997), 546–549.
- [CRS98] A. Cavicchioli, D. Repovš and A. B. Skopenkov, *Open problems on graphs, arising from geometric topology*, Topol. Appl. **84** (1998), 207–226.
- [RS99'] D. Repovš and A. B. Skopenkov, *Obstructions for Seifert fibrations and classification of Hamiltonian systems (in Russian)*, Uspehi Mat. Nauk **54:3** (1999); English transl., Russ. Math. Surv. **54:3** (1999).
- [RS99"] D. Repovš and A. B. Skopenkov, *Borromean rings and embedding obstructions (in Russian)*, Trudy Math. Inst. Ross. Akad. Nauk **225** (1999), 331–338; English transl., Proc. of the Steklov Inst. Math. **225** (1999), 314–321.
- [BRS99] D. Repovš, N. Brodsky and A. B. Skopenkov, *A classification of 3-thickenings of 2-polyhedra*, Topol. Appl. **94** (1999), 307–314.
- [CRS00] A. Cavicchioli, D. Repovš and A. B. Skopenkov, *An extension of the Bolsinov–Fomenko theorem on classification of Hamiltonian systems*, Rocky Mount. J. Math. **30:2** (2000), 447–476.
- [RS00] D. Repovš and A. Skopenkov, *Cell-like resolutions of polyhedra by special ones*, Colloq. Math. **86:2** (2000), 231–237.
- [RS01] D. Repovš and A. Skopenkov, *On contractible  $n$ -dimensional compacta, non-embeddable into  $\mathbb{R}^{2n}$* , Proc. Amer. Math. Soc. **129** (2001), 627–628.
- [ARS01] P. Akhmetiev, D. Repovš and A. Skopenkov, *Embedding products of low-dimensional manifolds in  $\mathbb{R}^m$* , Topol. Appl. **113** (2001), 7–12; (North-Holland, Elsevier).
- [ORS01] A. Onischenko, D. Repovš and A. Skopenkov, *Resolutions of 2-polyhedra by fake surfaces and embeddings into  $\mathbb{R}^4$* , Contemporary Math. **288** (2001), 396–400.
- [ARS02] P. Akhmetiev, D. Repovš and A. Skopenkov, *Obstructions to approximating maps of  $n$ -manifolds into  $\mathbb{R}^{2n}$  by embeddings*, Topol. Appl. **123** (2002), 3–14.
- [RS02] D. Repovš and A. Skopenkov, *On projected embeddings and desuspension of the  $\alpha$ -invariant*, Topol. Appl. **124** (2002), 69–75; (North-Holland, Elsevier).
- [MRS03] J. Malešič, D. Repovš and A. Skopenkov, *On incompleteness of the deleted product obstruction for embeddings*, Bol. Soc. Mat. Mexicana (3) **9** (2003), 165–170.
- [MS04] J. Mukai and A. Skopenkov, *A direct summand in a homotopy group of the mod 2 Moore space*, Kyushu J. Math. **58:1** (2004), 203–209.
- [CRS04] M. Cencelj, D. Repovš and A. Skopenkov, *On the Browder–Levine–Novikov embedding theorems*, Trudy MIRAN **247** (2004), 280–290.
- [RSS05] D. Repovš, A. Skopenkov and F. Spaggiari, *An infinite sequence of non-realizable weavings*, Discr. Appl. Math. **150:1-3** (2005), 256–260.
- [GS06] D. Gonçalves and A. Skopenkov, *Embeddings of homology equivalent manifolds with boundary*, Topol. Appl. **153:12** (2006), 2026–2034; arxiv:1207.1326.
- [CRS07] M. Cencelj, D. Repovš and A. Skopenkov, *Codimension two PL embeddings of spheres with nonstandard regular neighborhoods*, Chinese Annals of Mathematics,

Series B **28:5** (2007), 603-608; arxiv:math/0608653.

[Sk07'] A. Skopenkov, *A characterization of submanifolds by a homogeneity condition*, Topol. Appl. **154** (2007), 1894-1897; arxiv:math/0606470.

[GS14] D. Gonçalves and A. Skopenkov, *A useful lemma on equivariant maps*, Homology, Homotopy and Applications, **16:2** (2014), 307-309.

[Sk15'] A. Skopenkov, *Realizability of hypergraphs and Ramsey link theory*, arxiv:1402.0658

[Sk16] A. Skopenkov, *A user's guide to disproof of topological Tverberg conjecture*, arxiv:1605.05141

[Sk16'] A. Skopenkov, *Stability of intersections of graphs in the plane and the van Kampen obstruction*, arXiv:1609.03727

[SC] A. Skopenkov, *High codimension embeddings: classification*, submitted to Boll. Man. Atl. [http://www.map.mpim-bonn.mpg.de/High\\_codimension\\_embeddings](http://www.map.mpim-bonn.mpg.de/High_codimension_embeddings)

[SE] A. Skopenkov, *Embeddings just below the stable range: classification*, submitted to Boll. Man. Atl.

[http://www.map.mpim-bonn.mpg.de/Embeddings\\_just\\_below\\_the\\_stable\\_range:\\_classification](http://www.map.mpim-bonn.mpg.de/Embeddings_just_below_the_stable_range:_classification)

[ST] A. Skopenkov, *3-manifolds in 6-space*, submitted to Boll. Man. Atl.

[http://www.map.mpim-bonn.mpg.de/3-manifolds\\_in\\_6-space](http://www.map.mpim-bonn.mpg.de/3-manifolds_in_6-space)

[SF] A. Skopenkov, *4-manifolds in 7-space*, submitted to Boll. Man. Atl.

[http://www.map.mpim-bonn.mpg.de/4-manifolds\\_in\\_7-space](http://www.map.mpim-bonn.mpg.de/4-manifolds_in_7-space)

[SH] A. Skopenkov, *High codimension links*, submitted to Boll. Man. Atl.

[http://www.map.mpim-bonn.mpg.de/High\\_codimension\\_links](http://www.map.mpim-bonn.mpg.de/High_codimension_links)

[Sk] A. Skopenkov, *On the metastable Mabillard-Wagner conjecture*, arXiv:1702.04259.

[ST] A. Skopenkov, M. Tancer, *Hardness of almost embedding simplicial complexes in  $\mathbb{R}^d$* , arXiv:1703.06305.

[Sk17] A. Skopenkov, *Eliminating higher-multiplicity intersections in the metastable dimension range*, arXiv:1704.00143

[Sk17'] A. Skopenkov, *On van Kampen-Flores, Conway-Gordon-Sachs and Radon theorems*, arXiv:1704.00300.

### 3. Pedagogical papers and books (mostly in Russian)

Papers in Mat. Prosveschenie are available at <http://www.mccme.ru/free-books/matpros.html>

[VSS95] N. Vassiliev, V. Senderov and A. Skopenkov, *Around the Markov equation*, Kvant (1995), N6, 36–38.

[Sk96] A. Skopenkov, *Borsuk's problem*, Quantum **7:1** (1996), 16–21, 63.

[KS97] V. Kurlin and A. Skopenkov, *Basic embeddings of graphs into the plane*, Math. Obrazovanie **3** (1997), 105–113.

[KS98] V. Kurlin and A. Skopenkov, *Basic embeddings of graphs into the plane*, in: 9-th summer conference of Tournament of Towns, MCCME (1998), 34–44, 106–113.

[DSS99] V. N. Dubrovskiy, A. B. Skopenkov and A. V. Spivak, *Mathematics (materials of the 1997 summer school)*, SUNC MGU (1999).

[KS99] P. Kozhevnikov and A. Skopenkov, *Narrow trees in the plane*, Mat. Obrazovanie **5** (1999), 126–131.

[Sk99] A. Skopenkov, *n-dimensional cube, polynomials and solution of the Borsuk problem*, Mat. Prosveschenie **3** (1999).

[RS00] D. Repovš and A. Skopenkov, *Obstruction theory for beginners*, Mat. Prosveschenie **4** (2000).

[ST00] A. Skopenkov and A. Talambutsa, *Packing of regular polyhedra*, Mat. Obrazovanie **3(14)** (2000), 52–53.

[RS02] D. Repovš and A. Skopenkov, *Characteristic classes for beginners*, Mat. Prosveschenie **6** (2002), 60-77.

- [ST04] A. Skopenkov and A. Talambutsa, *Extremal dispositions of regular polyhedra*, Mat. Prosveschenie **8** (2004), 53–65.
- [Sk05] A. Skopenkov, On the Kuratowski graph planarity criterion, Mat. Prosveschenie, **9** (2005), 116–128. arxiv:0802.3820
- [KS06] A. Kaibkhanov and A. Skopenkov, A short proof of the transcendence of the Mahler number Mat. Prosveschenie, **10** (2006), 176–184. arxiv:1204.5045
- [Sk06] A. Skopenkov, Olympiads and mathematics, Mat. Prosveschenie, **10** (2006), 57–63. Abridged English translation (abstract of a talk joint with N.N. Konstantinov): <http://www.mccme.ru/circles/oim/oimpeng.pdf>
- [OS07] A. Oshemkov and A. Skopenkov, Olympiads in geometry and topology (in Russian), Mat. Prosveschenie, **11** (2007), 131–140.
- [ST07] A. Skopenkov and A. Telishev, Once again on the Kuratowski graph planarity criterion, Mat. Prosveschenie, **11** (2007), 159–160. arxiv:0802.3820
- [BRS08] V. Bogachev, A. Raigorodskiy, A. Skopenkov and N. Tolmachev Students’ mathematical olympiades and interdepartment seminar at Moscow State University, Mat. Prosveschenie, **12** (2008), 205–222.
- [KS08] P. Kozlov and A. Skopenkov, A la recherche de l’algèbre perdue: du cote de chez Gauss, Mat. Prosveschenie **12** (2008), 127–144. arxiv:0804.4357
- [Sk08] A. Skopenkov, Some reflections on research problems for high-school students, Mat. Prosveschenie, **12** (2008), 23–32.
- [Sk09] A. Skopenkov, Basic Differential Geometry As a Sequence of Interesting Problems, in Russian, MCCME, Moscow, 2009, 2010, 2016. arxiv:0801.1568
- [ZPS09] Mathematics via problems, editors: A. Zaslavsky, D. Permyakov, A. Skopenkov, M. Skopenkov and A. Shapovalov. Moscow, MCCME, 2009. <http://www.mccme.ru/free-books/olymp/matprob.pdf>
- [Sk10] A. Skopenkov, Basic embeddings and Hilbert’s 13th problem, Mat. Prosveschenie, **14** (2010) 143–174, arxiv:1001.4011. Abridged English translation: arxiv:1003.1586
- [ABZ10] I. Arzhantsev, V. Bogachev, A. Zaslavsky, V. Protasov, A. Raigorodskiy, A. Skopenkov, Students’ mathematical olympiades at Moscow State University, Mat. Prosveschenie, **14** (2010), 225–234.
- [BKS11] V. Bragin, Ant. Klyachko, A. Skopenkov, When any group of  $n$  elements is cyclic? to appear in [Z16]. arxiv:1108.5406
- [Sk11] A. Skopenkov, A simple proof of the Abel-Ruffini theorem, Mat. Prosveschenie, **15** (2011) 113–126, arxiv:1102.2100.
- [SS11] A. Sgibnev and A. Skopenkov, On some high-school students conferences, Matematika v shkole, 2011, N 4, 44–45.
- [SS11’] A. Sgibnev and A. Skopenkov, Kvant, 2011, <http://kvant.mccme.ru/pdf/2011/056/Inform.pdf>
- [Sk12] A. Skopenkov, Ambient Homogeneity, MCCME, Moscow, 2012, arxiv:1003.5278.
- [Sk12’] A. Skopenkov, Yet another proof from the book: Menger theorem, Mat. Prosveschenie, **16** (2012), 48–49.
- [ABG12] I. Arzhantsev, V. Bogachev, A. Garber, A. Zaslavsky, V. Protasov and A. Skopenkov, Students’ mathematical olympiades at Moscow State University 2010–2011, Mat. Prosveschenie, **16** (2012), 214–227.
- [IKR13] M. Ilyinskiy, A. Kupavskiy, A. Raigorodskiy and A. Skopenkov, Discrete analysis for mathematician and programmers, Mat. Prosveschenie, **17** (2013).
- [Sk13] A. Skopenkov, A two-page disproof of the Borsuk partition conjecture, Mat. Prosveschenie, **17** (2013). <http://arxiv.org/abs/0712.4009> v2
- [Sk14] A. Skopenkov, Some more proofs from the Book: solvability and insolvability of equations in radicals, to appear in [Z16]. <http://arxiv.org/abs/0804.4357> v6

[IRS15] D. Ilyinskiy, A. Raigorodskiy and A. Skopenkov, Existence proofs in combinatorics using independence, *Mat. Prosveschenie*, 19 (2015), arxiv:1411.3171

[PS15] V.V. Prasolov, A.B. Skopenkov, Some reflections on why Lobachevsky geometry was recognized, *Mat. Prosveschenie*, 19 (2015), arxiv:1307.4902

[Sk15] A. Skopenkov, Algebraic Topology From Geometric Viewpoint, MCCME, Moscow, 2015. <http://www.mccme.ru/circles/oim/home/combtop13.htm#photo>

[CDG16] A. Chernov, A. Daynyak, A. Glibichuk, M. Ilyinskiy, A. Kupavskiy, A. Raigorodskiy and A. Skopenkov, Elements of Discrete Mathematics As a Sequence of Problems, MCCME, Moscow, 2016. <http://www.mccme.ru/circles/oim/discrbook.pdf>

[ZSS17] Mathematics via problems: from olympiades and math circles to a profession, editors: A. Zaslavsky, A. Skopenkov, and M. Skopenkov. MCCME, Moscow, 2017. <http://www.mccme.ru/circles/oim/sturm.pdf>

[Sk17] A. Skopenkov, Embeddings into the plane of graphs with vertices of degree 4, *Mat. Prosveschenie*, 21 (2017), arxiv:1008.4940.

[VSY17] A. Volostnov, A. Skopenkov and Yu. Yarovikov, A study on recursive relations, *Mat. Prosveschenie*, 21 (2017).

[Sk15'] A. Skopenkov, A short elementary proof of the Ruffini-Abel Theorem, arxiv:1508.03317

[Sk16] A. Skopenkov, How Fermat found extrema, arXiv:1610.05968

[Sk] A. Skopenkov, Algebraic Topology From Algorithmic Viewpoint, predraft of a book, <http://www.mccme.ru/circles/oim/algor.pdf>

[Sk'] A. Skopenkov, A short introduction into link and knot theory, [http://www.mccme.ru/circles/oim/exalg\\_eng.pdf](http://www.mccme.ru/circles/oim/exalg_eng.pdf)

#### 4. Research projects for Summer Conference of Tournament of Towns (bilingual; after 2001)

[GSS] A. Gaifullin, A. Skopenkov, M. Skopenkov and A. Shapovalov, Projections of skew lines, <http://www.turgor.ru/lktg/2001/index.php>

[NS] I. Nikokoshev and A. Skopenkov, Examples of transcendent numbers, <http://www.turgor.ru/lktg/2002/problem5.ru/index.php>

[KSN] The complexity of summation, Yu. Kudryashov, A. Skopenkov, I. Nikokoshev, <http://www.turgor.ru/lktg/2003/summ.en/index.htm>

[CKS] New ways of weaving baskets, Yu. Kudryashov, A. Skopenkov, A. Sossinsky and G. Chelnokov. <http://www.turgor.ru/lktg/2004/lines.en/index.htm>

[KPS] Realization of graphs with rotations, A. Kaibkhanov, D. Permyakov and A. Skopenkov, <http://www.turgor.ru/lktg/2005/3/index.htm>

[SS] A. Skopenkov and I. Shnurnikov, Basic planar sets <http://www.turgor.ru/lktg/2006/5/index.htm>

[BDK] Quadratic irrationals, A. Belov-Kanel, P. Dergach, P. Kozlov and A. Skopenkov, <http://www.turgor.ru/lktg/2007/5/index.php>

[SSN] Stability of intersections of paths in the plane, A. Skopenkov, M. Skopenkov, I. Netai, P. Dergach, <http://www.turgor.ru/lktg/2008/5/index.php>

[BKK] D. Baranov, Ant. Klyachko, K. Kokhas, A. Skopenkov and M. Skopenkov, When any group of  $n$  elements is cyclic? <http://www.turgor.ru/lktg/2011/6/index.php>

[ABR] S. Avvakumov, A. Berdnikov, A. Rukhovich and A. Skopenkov, How do curved spheres intersect in 3-space, or two-dimensional meandra, <http://www.turgor.ru/lktg/2012/3/index.htm>

[RSS] A. Rukhovich, A. Skopenkov, M. Skopenkov, A. Zimin, Realizability of hypergraphs, <http://www.turgor.ru/lktg/2013/1/index.htm>

[ABG] D. Akhtyamov, I. Bogdanov, A. Glebov, A. Skopenkov, E. Streltsova and A. Zykin, Solving equations using one radical, <http://www.turgor.ru/lktg/2015/4/index.htm>

[BMS] A. Belov, I. Mitrofanov, A. Skopenkov, A. Chilikov, S. Shaposhnikov, 13th Hilbert Problem about superpositions of functions, <http://www.turgor.ru/lktg/2016/5/index.htm>