

## 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.
- [SSS] J. Segal, A. Skopenkov and S. Spieß, *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.
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- [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 **148:4** (2018), 835–848; arXiv:1402.1853.
- [Sk15] A. Skopenkov, *Classification of knotted tori*, Proc. A of the Royal Society of Edinburgh **150:2** (2020), 549–567; arXiv:1502.04470.
- [Sk16] A. Skopenkov, *A user's guide to the topological Tverberg conjecture*, Russian Math. Surveys, **73:2** (2018), 323–353; arXiv:1605.05141. §4 accessible as A. Skopenkov, *On van Kampen–Flores, Conway–Gordon–Sachs and Radon theorems*, arXiv:1704.00300.
- [ST17] A. Skopenkov and M. Tancer, *Hardness of almost embedding simplicial complexes in  $\mathbb{R}^d$* , Discr. and Comp. Geom. **61:2** (2019), 452–463; arXiv:1703.06305.
- [AMS+] S. Avvakumov, I. Mabillard, A. Skopenkov and U. Wagner, *Eliminating Higher-Multiplicity Intersections, III. Codimension 2*, Israel J. Math. **245** (2021), 501–534; arXiv:1511.03501.
- [CS16] D. Crowley and A. Skopenkov, *Embeddings of non-simply-connected 4-manifolds in 7-space, I. Classification modulo knots*, Moscow Math. J. **21:1** (2021), 43–98; arXiv:1611.04738.

- [CS16'] D. Crowley and A. Skopenkov, *Embeddings of non-simply-connected 4-manifolds in 7-space, II. On the smooth classification.*, Proc. A of the Royal Society of Edinburgh **152:1** (2022), 163–181; arXiv:1612.04776.
- [AKS] S. Avvakumov, R. Karasev and A. Skopenkov, *Stronger counterexamples to the topological Tverberg conjecture*, Combinatorica **43** (2023), 717–727; arXiv:1908.08731.
- [Sk17] A. Skopenkov, *Eliminating higher-multiplicity intersections in the metastable dimension range*, submitted; arXiv:1704.00143.
- [DS22] S. Dzhenzher and A. Skopenkov, *A quadratic estimation for the Kühnel conjecture on embeddings*, submitted; arXiv:2208.04188.

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- [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.
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- [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. **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.
- [BRS] 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.
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- [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).
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- [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.
- [Sk16'] A. Skopenkov, *Stability of intersections of graphs in the plane and the van Kampen obstruction*, *Topol. Appl.* 240 (2018) 259–269, arXiv:1609.03727.
- [Sk18] A. Skopenkov. *Invariants of graph drawings in the plane*, *Arnold Math. J.*, 6 (2020) 21–55; full version: arXiv:1805.10237. Russian version: *Mat. Prosveschenie* 31 (2023).
- [Sk18o] A. Skopenkov. *A short exposition of S. Parsa's theorems on intrinsic linking and non-realizability*, *Discr. Comp. Geom.* 65:2 (2021), 584–585; full version: arXiv:1808.08363.
- [SC] A. Skopenkov, *Embeddings in Euclidean space: an introduction to their classification*, <http://www.map.mpim-bonn.mpg.de/>  
*Embeddings\_in\_Euclidean\_space: an introduction to their classification*, *Boll. Man. Atl.*, to appear.
- [SE] A. Skopenkov, *Embeddings just below the stable range: classification*, *Boll. Man. Atl.*, to appear.  
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- [ST] A. Skopenkov, *3-manifolds in 6-space*, *Boll. Man. Atl.*, to appear.  
[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*, *Boll. Man. Atl.*, to appear.  
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- [SH] A. Skopenkov, *High codimension links*, *Boll. Man. Atl.*, to appear.  
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- [AMS] S. Avvakumov, I. Mabillard, A. Skopenkov and U. Wagner, *Eliminating Higher-Multiplicity Intersections, III. Codimension 2 (extended abstract)*, *Russian Math. Surveys*, 75:6 (2020) 173–174.
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- [KS20] R. Karasev and A. Skopenkov, Some ‘converses’ to intrinsic linking theorems, *Discr. Comp. Geom.*, 70:3 (2023), 921–930, arXiv:2008.02523.
- [Sk24] A. Skopenkov, The band connected sum and the second Kirby move for higher-dimensional links, *Stud. Sci. Math. Hung.*, 62:4 (2025) 320–335, arXiv:2406.15367.
- [KS24] R. Karasev and A. Skopenkov, Short proofs of Tverberg-type theorems for cell complexes, *Discr. Comp. Geom.*, (2025), arXiv:2405.05629.
- [KS21] E. Kogan and A. Skopenkov, A short exposition of the Patak-Tancer theorem on non-embeddability of  $k$ -complexes in  $2k$ -manifolds, submitted, arXiv:2106.14010.
- [SS23] A. Skopenkov and O. Styrts, Embeddability of join powers and minimal rank of partial matrices, submitted, arXiv:2305.06339.
- [Sk24] A. Skopenkov, Embeddings of  $k$ -complexes in  $2k$ -manifolds and minimum rank of partial symmetric matrices, submitted, arXiv:2112.06636v4.
- [AMS] E. Alkin, A. Miroschnikov, A. Skopenkov, Invariants of almost embeddings of graphs in the plane, submitted, arXiv:2410.09860.
- [Sk17o] A. Skopenkov, On the metastable Mabillard-Wagner conjecture, arXiv:1702.04259.
- [Sk22] A. Skopenkov, Invariants of embeddings of 2-surfaces in 3-space, arXiv:2201.10944.

#### *2A. Complements to math reviews*

- A. Skopenkov, On some results by S. Belkov and I. Korepanov, arXiv:1105.0085.
- A. Skopenkov, A short exposition of the Levine-Lidman example of spineless 4-manifolds, arXiv:1911.07330.
- A. Skopenkov, On some results of S. Abramyan and T. Panov, arXiv:2005.11152.
- A. Skopenkov, To S. Parsa’s theorem on embeddability of joins, arXiv:2302.11537.

#### *2B. Slides for talks*

- S. Dzhenzher and A. Skopenkov, Quadratic estimation for the Kühnel conjecture, <https://www.mccme.ru/circles/oim/hoffnung.pdf>
- A. Skopenkov, Invariants of graph drawings in the plane, [https://www.mccme.ru/circles/oim/invadraw\\_beamer.pdf](https://www.mccme.ru/circles/oim/invadraw_beamer.pdf)
- A. Skopenkov, Whitney trick for eliminating multiple intersections, [https://www.mccme.ru/circles/oim/eliminat\\_talk.pdf](https://www.mccme.ru/circles/oim/eliminat_talk.pdf)
- A. Skopenkov, Netflix problem and realization of (hyper)graphs, <https://www.mccme.ru/circles/oim/home/netflix20sep.pdf>

#### *3. Pedagogical books*

- [Sk21m] A. Skopenkov, *Mathematics via Problems. Part I. Algebra.* 2021, AMS, Providence. [https://www.mccme.ru/circles/oim/algebra\\_eng.pdf](https://www.mccme.ru/circles/oim/algebra_eng.pdf)
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#### 4. Pedagogical papers (in Russian unless indicated otherwise)

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

[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.

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[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>

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[Sk09] A. Skopenkov, *Yet another proof from the Book: Gauss-Wantzel theorem*, Mat. Prosveschenie, 28 (2021), 133–141. arXiv:0908.2029.

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- [BKS] V. Bragin, Ant. Klyachko, A. Skopenkov, When any group of  $n$  elements is cyclic? published in [ZSS]. arXiv:1108.5406
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- [Sk12'] A. Skopenkov, Yet another proof from the book: Menger theorem, *Mat. Prosveschenie*, 16 (2012), 48-49.
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- [IKR] M. Ilyinskiy, A. Kupavskiy, A. Raigorodskiy and A. Skopenkov, Discrete analysis for mathematicians and programmers, *Mat. Prosveschenie*, 17 (2013).
- [Sk13] A. Skopenkov, A two-page disproof of the Borsuk partition conjecture, *Mat. Prosveschenie*, 17 (2013). arXiv:0712.4009 v2
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- [Sk16] A. Skopenkov, The graph and the number of roots of a cubic polynomial, *Kvant*, rejected after being accepted, published in [ZSS], arXiv:1610.05968.
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[MNS] A. Miroshnikov, O. Nikitenko, A. Skopenkov, Cycles in graphs and in hypergraphs: towards homology theory, *Mat. Prosveschenie*, 35 (2025), 137–184, arXiv:2406.16705.

[ZS25] A. Zaslavsky and A. Skopenkov, Research projects and Moscow Mathematical Conference for high school students, arXiv:2512.22191.

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##### 5. *Research projects for Summer Conference of Tournament of Towns (bilingual since 2001)*

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