Oleg R Musin

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Education

Doctor of Science, Steklov Math Institute of RAS, Russian Highest Accreditation Commission

Ph.D. Mathematics, Moscow State University, scientific advisor – Fields medal winner S. P. Novikov.

M.S. Mathematics (summa cum laude), Moscow State University, Department of Geometry.

Positions held

The University of Texas at Brownsville (now UTRGV) – Professor (since 2007)

Moscow State University – Senior Scientist, Professor (1984-2007)

visiting positions: SUNY at Albany, Los Alamos National Lab, Free University of Brussels, MSRI (Berkeley), Stanford University, University of Maryland, Penn State, ICERM (Brown University)

Teaching and Research Fields

Discrete and Computational Geometry, Topology, Sphere Packings, Combinatorics, Applied Mathematics, Coding theory, Algorithms, Image Processing, Cartography and GIS

Teaching Experience

Kolmogorov High School for gifted students in Mathematics and Physics (Algebra and Geometry)

Moscow State University (many undergraduate and graduate courses)

The University of Texas at Brownsville:

Undergraduate courses – Calculus I, II and III; Geometry I and II; Linear Algebra; Applied Discrete Math, Foundations of Mathematics & Introduction to Math Proofs

Graduate courses – Contemporary Geometry, Number Theory, Graph Theory, Numerical Analysis, Discrete Mathematics, Cyphers and Codes

Grants

PI and co-PI of more than 60 research grants (NSF, NSA, Russian, European, UNDP). Here is a list of 2008–2018 awarded grants

UTRGV College of Science seed grant "Research Cluster Computational Geometry and Biology" – PI (2017 –2019).

NSF Division of Mathematical Sciences conference grant 1623600 – PI (2016-2018)

Russian Foundation for Basic Research grant 15-01-99563 – PI(2015 – 2017)

NSF Division of Mathematical Sciences 1400876 – PI (2014-2017)
"Sphere packings and related extremal problems"

RF Government grant 11.G34.31.0053 ($5M) –co–PI (2011–2013)

NSF Division of Mathematical Sciences 1101688 – PI (2011-2014)
"Positive definite functions in distance geometry and combinatorics"

NSA Mathematical Sciences Program Conference Grant – co-PI (2012-2013)

RFBR grants 11-01-00735 and 13-01-12458– PI

NSA Mathematical Sciences Program Conference Grant – co-PI (2011-2012)

NSF Division of Mathematical Sciences 0807640 – PI (2008-2011)
"Multivariate positive definite polynomials and their applications via SDP"

NSA Mathematical Sciences Program Research Grant MSPF-08G-201 – PI (2009-2011)

Service

Research Cluster "Computational Geometry and Biology" – director (since 2017).

COS Tenure & Promotion Committee – member (since Fall 2016)

SMSS Director Search Committee – member (since Fall 2016)

SMSS Applied & Computational Math Search Committee – member (2015–2016)

SMSS Annual Faculty Evaluation Committee – co–chair(2015–16)

UTRGV Full Professor Search Committee – member (Spring 2015)

Ad Interim Director SMSS Committee – cochair (Spring 2015)

College (CSMT) Travel Fund Committee – member (2009–2015)

Synergistic Activities

Conference Organizing Committee

Workshop "Computational Biology ", UTRGV: 11/8/2018 (Edinburg), 11/13/2018 (Brownsville)

Workshop "Computational Biology - I", UTRGV, Brownsville, TX, August 30–31, 2017

International conference "Discrete Geometry and Algebraic Combinatorics", South Padre Island, Texas, years 2008–2010, 2012–2017 (http://www.utrgv.edu/discgeo/)

Spring Southeastern Sectional AMS Meeting, University of Georgia, Athens, GA, March 5-6, 2016

Special Session "Discrete Geometry and Algebraic Combinatorics" 2013 Joint Mathematics Meetings, San Diego, January 9–12, 2013

International Conference "Geometry, Topology and Number Theory. Delone – 120", Moscow, August 16–20, 2010 (http://delone120.mi.ras.ru/indexr.html)

Books edited

Discrete Geometry and Algebraic Combinatorics, American Math. Soc. Contemporary Math., vol. 625, 2014

The Interaction of Cartography and Geoinformatics, A. Berlyant and O. Musin (eds), Moscow, Scientific World Press, 2000

The Black Sea GIS, A.M. Berlyant, V.O. Mamaev, and O.R Musin (Eds.), Moscow, Astrea Press, 1999

Popular Lectures and Mathematical Olympiad

Organizer of public mathematical lectures for high school students and math majors (UTB, 2010–2015)

Jury of the All-Russian Mathematical Olympiad (all stages) (1987-2002)

Jury of 1992 International Mathematical Olympiad

Publications

Overview

I have more than 150 publications (papers in refereed journals, books, chapters in books and conference proceedings) in Geometry, Topology, Computational Geometry, Numerical Analysis, Cartography, GIS, Remote Sensing, Image Processing, Computer Graphics and other.

In 2003 I solved one of the basic geometric problems in sphere packings - the kissing problem in four dimensions. A full version of this work was published in "Annals of Mathematics" (O. R. Musin, The kissing number in four dimensions, *Annals of Math.*, **168** (2008), 1-32)
In 2004 appeared at least four publications about my work:

F. Pfender, and G.M. Ziegler. Kissing numbers, sphere packings, and some unexpected proofs// Notices Amer. Math. Soc., vol. 51, 873-883, September 2004.

E. Klarreich. Oddbals // Science News, vol. 166, No. 14, 219-221, October 2, 2004.

G.M. Ziegler. Kissing numbers: Surprises in dimension four // Emissary. Mathematical Science Research Institute, pp. 4-5, Spring 2004.

B. Casselman. The difficulties of kissing in three dimensions, Notices Amer. Math. Soc., 51 (2004), 884-885.

Awards

In 2012 the Russian Foundation for Basic Research awarded our popular article [J31] (with A. V. Akopyan and G. A. Kabatyanskiy) about sphere packings as the best 2012 popular publication in mathematics.

Russian GIS–Association in 1999 recognized my article [J50] as "Outstanding Academic Publication" for 1998.

Our CD-Rom "Black Sea GIS" (V.O. Mamaev, and O.R. Musin (Eds.)) [B6] won "Choice Outstanding Book Award" for 1998, (CHOICE is the book review journal published by the Association of College and Research Libraries of the American Library Association), also United Nations Publications recognized this CD-Rom as "Outstanding Academic Book".

Submitted papers [S]

1. P. D. Dragnev and **O. R. Musin**, *Log–optimal* $(d+2)$*-configurations in d–dimensions*, preprint, 10/2018.
2. **O. R. Musin,** *An extension the semidefinite programming bound for spherical codes,* preprint, 9/2018
3. J. Grbić, D. Kishimoto, **O. R. Musin** and Jie Wu, *Maps into spheres, covers, and cobordism,* preprint, August 2018
4. **O. R. Musin** and A. Yu. Volovikov, Tucker type lemmas for G-spaces, preprint, arXiv:1612.07314

Journal publications (related math) [J]

1. **O. R. Musin,** Graphs and spherical two–distance sets, *Euro. J. Comb.*, **80** (2019), 311–325
2. **O. R. Musin**, Analogs of Steiner's porism and Soddy's hexlet in higher dimensions via spherical codes, *Arch. Math.*, **111** (2018), 493–501
3. **O. R. Musin**, Towards a proof of the 24–cell conjecture, *Acta Math Hungar.*, **155** (2018), 184–199
4. Zhi Lü and **O. R. Musin,** Rigidity of powers and Kosniowski's conjecture, *Siberian Electr. Math Reports,* **15** (2018), 1227–1236
5. **O. R. Musin,** Five Essays on the László Fejes Tóth Geometry, *Bolyai Soc. Math. Studies* , **27** (2018), 321–333
6. **O. R. Musin** and Jie Wu, Cobordism classes of maps and covers for spheres, *Topology and its Applications*, **237** (2018), 21–25.
7. H. Edelsbrunner, A. Glazyrin, **O. R. Musin** and A. Nikitenko. The Voronoi functional is maximized by the Delaunay triangulation in the plane, Combinatorica, **37:5** (2017), 887–910.
8. **O. R. Musin,** KKM type theorems with boundary conditions, *J. Fixed Point Theory Appl.*, **19** (2017), 2037–2049.
9. **O. R. Musin,** Generalizations of Tucker–Fan–Shashkin lemmas, *Arnold Math. J.*, 2:3 (2016), 299–308.

10. **O. R. Musin,** Circle actions with two fixed points, *Math Notes*, **100:4** (2016), 636–638.
11. **O. R. Musin,** Homotopy invariants of covers and KKM–type lemmas, *Algebraic & Geometric Topology*, **16:3** (2016) 1799–1812.
12. **O. R. Musin,** A. V. Nikitenko, Optimal packings of congruent circles on a square flat torus, *Discrete & Computational Geometry'*, **55:1** (2016), 1–20.
13. **O. R. Musin** and A. Yu. Volovikov, Borsuk–Ulam type spaces, *Mosc. Math. J.,* **15:4** (2015), 749–766
14. **O. R. Musin,** A. S. Tarasov, The Tammes problem for N=14, *Experimental Math.,* **24:4** (2015), 460–468
15. **O. R. Musin,** A. S. Tarasov, Extreme problems of circle packings on a sphere and irreducible contact graphs. *Proc. Steklov Inst. of Math,* **288** (2015), 117–131
16. **O. R. Musin,** Sperner type lemma for quadrangulations, *Mosc. J. Combinatorics and Number Theory,* **5:1** (2015), 26–35
17. **O. R. Musin,** Extensions of Sperner and Tucker's lemma for manifolds, *J. of Combin. Theory Ser. A,* **132** (2015), 172–187.
18. A. Glazyrin and **O. R. Musin**. Price of SDP relaxations for spherical codes, in "Designs, Codes, Graphs and Related Areas", RIMS Kokyuroku , **1889** (2014), 1–6.
19. **O. R. Musin** and A. S. Tarasov, Enumeration of irreducible contact graphs on the sphere, *J. of Math Sciences,* **203:6** (2014), 837–850
20. M. Bouniaev, N. Dolbilin, **O. R. Musin**, A. Tarasov, Two groups of geometrical problems related to study of fullerenes and crystals, *J. Math., Statistics and Operations Research,* **2:2** (2014), 7–22
21. **O. R. Musin**, Multivariate positive definite functions on spheres, *AMS Series: Contemporary Mathematics,* **625** (2014), 177–190
22. N. P. Dolbilin, H. Edelsbrunner, A. Glazyrin, **O. R. Musin**. Functionals on triangulations of Delaunay sets, *Mosc. Math J.*, **14** (2014), 491–504
23. A. Akopyan, **O. R. Musin**. On two-distance sets, *Mat. Prosv., ser. III,* vol. **17** (2013), 136–151
24. **O. R. Musin,** A. U. Ukhalov, H. Edelsbrunner, O. P. Yakimova, Fractal and Computational Geometry for Generalizing Cartographic Objects, *Model. Anal. Inform. Sist.,* **19:6** (2012), 152–160.
25. N. Dolbilin, H. Edelsbrunner, A. Ivanov, **O. Musin,** M. Nevskii. Yaroslavl International Conference on Discrete Geometry (dedicated to the centenary of A. D. Alexandrov). *Model. Anal. Inform. Sist.,* **19:6** (2012), 92–100
26. N. Dolbilin, H. Edelsbrunner, A. Ivanov, **O. Musin.** The First Yaroslavl Summer School on Discrete and Computational Geometry. *Model. Anal. Inform. Sist.,* **19:4** (2012), 168–173
27. **O. R. Musin**, Borsuk-Ulam type theorems for manifolds, *Proc. Amer. Math. Soc.,* **140** (2012), 2551–2560
28. **O. R. Musin** and A. S. Tarasov, The strong thirteen spheres problem, *Discrete & Comput. Geom.,* **48** (2012), 128–141.
29. N. P. Dolbilin, H. Edelsbrunner and **O. R. Musin**. On the optimality of functionals over triangulations of Delaunay sets. *Russian Math Survey,* **67:4** (2012), 781–783.
30. P. Boyvalenkov, S. Dodunekov and **O. R. Musin.** A survey on the kissing numbers, *Serdica Mathematical Journal,* **38:4** (2012), 507–522.

31. A. V. Akopyan, G. A. Kabatyanskiy and **O. R. Musin**. Kissing numbers, codes and spherical polynomials, *Mat. Prosv., ser. III,* **16** (2012), 57–74

32. **O. R. Musin** and H. Nozaki. Bounds on three- and higher-distance sets. *European Journal of Combinatorics,* **32** (2011) 1182–1190.

33. A. Barg and **O. R. Musin.** Bounds on sets with few distances. *Journal of Combinatorial Theory Series A,* **118** (2011), 1465–1474.

34. **O. R. Musin.** On rigid Hirzebruch genera. *Moscow Mathematical Journal,* **11:1** (2011), 139–147.

35. A. Akopyan, A. Glazyrin, **O.R. Musin,** A. Tarasov, The extremal spheres theorem. *Discrete Mathematics.* **311** (2011), 171–177.

36. A. Barg and **O. R.. Musin,** Bounds on codes with few distances, *2010 IEEE International Symposium on Information Theory,* art. no. 5513692 (2010), 1115–1119.

37. **O. R. Musin**, Converse theorem on equivariant genera. *Russian Math Surveys*, 64:4 (2009), 753–755.

38. **O. R. Musin**, Spherical two-distance sets, *J. Comb. Theory, Ser. A,* **16** (2009), 988–995.

39. **O. R. Musin**, Bounds for codes by semidefinite programming, *Proc. of Steklov's Math. Institute,* **263** (2008), 134–149.

40. **O. R. Musin**, The kissing number in four dimensions, *Annals of Math.,* **168** (2008), no. 1, 1-32.

41. A. Barg and **O. R.. Musin,** Codes in spherical caps, *Advances in Math. of Communications,* **1:1** (2007), 131–149.

42. **O. R. Musin**, The one-sided kissing number in four dimensions, *Periodica Math. Hungar.,* **53** (2006), 209–225.

43. **O. R. Musin**, The kissing problem in three dimensions, *Discrete & Comp. Geometry,* **35** (2006), 375–384.

44. **O. R. Musin**, Curvature extrema and four–vertex theorems for polygons and polyhedra, *J. Math Sciences,* **119:2** (2004), 268–277.

45. **O. R. Musin**, The problem of the twenty–five spheres, *Russian Math. Surveys,* **58** (2003), 794–795.

46. S. M. Koshel and **O. R. Musin**, Methods of digital modeling: kriging and radial interpolation, *Inf. Bull. GIS - Assoc.*, No. 2 & No. 3, 2001.

47. B.V. Vinogradov, S.M. Koshel, K.N. Kulik, **O.R. Musin,** and P.B. Fedotov. Prognosis of the spaciotemporal dynamics of disturbed ecosystems using three-dimensional universal kriging based on sequential aerial and space surveys, *Doklady Biological Sciences,* **371** (2000), 147–151.

48. **O. R. Musin**, Voronoi diagram and Delaunay triangulation, *Inf. Bull. GIS - Assoc.*, No. 2 & No. 3, 1999.

49. **O. R. Musin**, Chebyshev's systems and zeros of function on convex curves, *Proc. Steklov Math. Insti.*, **221** (1998), 247–256.

50. **O. R. Musin**, Digital models for GIS, *Inf. Bull. GIS - Assoc.*, No. 4 & No. 5, 1998.

51. **O. R. Musin**, Four–vertex theorem for polygons, *Kvant,* No. 2, pp. 11–13, 1997.

52. A.M. Berlyant, **O. R. Musin**, V.O. Mamaev, A.R. Alyautdinov, I.V. Kalinkin, Black Sea GIS, *GIS–review*, No. 1, 1997.

53. A.M. Berlyant, V.O. Mamaev, **O. R. Musin**, Implementation of the Black Sea GIS project, *Geodesy & Cartography,* No. 6, 34–40, 1997.

54. A.M. Berlyant, Yu. F. Knizhnikov, S.V. Marshev, **O. R. Musin**, T.G. Svatkova, E.R. Chalova, Digital atlas of Moscow University, *Vestnik MSU*, ser. 5, No. 2, 57–60, 1996.

55. **O. R. Musin**, Index of harmony and Delaunay triangulation, *Symmetry: Culture and Science,* **6:3** (1995), 389–392.

56. A.M. Berlyant, A.R. Alyautdinov, **O. R. Musin**, A.P. Platonov, Mapping of telecommunication networks, *GIS–review*, No. 2, 1995.

57. **O. R. Musin**, Topographic structure of image, *Lecture Notes in Computer Science,* **719** (1993), 24–30.

58. **O. R. Musin**, On some problems of Computational Geometry and Topology, *Lecture Notes in Mathematics,* **1520** (1992), 57–80.

59. A.M. Berlyant, S. M. Koshel, **O. R. Musin**, L. A. Suetova, Constructing a global digital database using a world hypsometric map 1:15,000,000 scale: preliminary results, *Mapping sciences and remote sensing,* **29:2** (1992), 146–154.

60. **O. R. Musin**, Efficient algorithms for testing membership of a point in polygon and polyhedron, *Programming and Computer Software,* **17:4,** (1991), 228–235.

61. S.M. Koshel, **O.R. Musin** and S.N. Serbenyuk. Software package "MAG" for digital elevation modeling, *Geodesy & Cartography,* No. 4, 44–46, 1991.

62. **O. R. Musin**, Fast geometric transformation for Image Processing, *Int. J. Imaging Systems and Technology,* **3** (1991), 257–261.

63. V.A. Sadovnichy, S.N. Serbenyuk, V.P. Belov, **O.R. Musin**, B.A. Novakovskiy, D.A. Usikov, V.N. Sytenko. Digital model of Phobos' surface, *Vestnik MSU*, Ser. 5, No. 2, 43–54, 1991

64. S.M. Koshel, **O.R. Musin** and S .N. Serbenyuk. Methods of digital elevation modeling for scattered points, *Geodesy & Cartography,* No. 11, 31–35, 1990.

65. **O. R. Musin**, S. N. Serbenyuk, T. V. Sobchuk. Curvature and cartographic generalization, *Vestnik MSU*, Ser. 5, No. 5, 49–56, 1990.

66. **O. R. Musin** and S.N. Serbenyuk. Mathematical modeling for cartography and morphometry, *Geodesy & Cartography,* No. 5, 42–46, 1989.

67. V.V. Komissarov, **O.R. Musin,** B.A. Novakovskiy, Yu.V. Sventek, S.N. Serbenyuk. Space photomaps - traditional and artificial, *Vestnik MSU*, Ser. 5, No. 6, 68–74, 1987.

68. **O. R. Musin**, B.A. Novakovskiy and S.N. Serbenyuk. Computer assisted mapping of slope angles and expositions based on aero–photos, *Geomorphology,* No. 4, 30–36, 1987.

69. **O. R. Musin** and S.N. Serbenyuk, Computer assisted mapping of contour and related maps, *Geodesy & Cartography,* No. 7, 42–45, 1986.

70. **O. R. Musin**, B.A. Novakovskiy and S.N. Serbenyuk. Photogrammetric principles of combination of Remote Sensing and three-dimensional mapping, *Vestnik MSU,* Ser. 5, No. 6, 56–64, 1986

71. **O. R. Musin**, Generators of S^1 - bordisms, *Math. USSR Sbornik,* **44:3** (1983), 325–334.

72. **O. R. Musin**, Action of a circle on homotopy complex projective spaces, *Math Notices,* **28:1** (1980), 533–540.

73. **O. R. Musin**, Unitary circle action on complex projective spaces, *Russian Math. Surveys,* **33:6** (1978), 249–250.

Books, Books edited [B]

1. Discrete Geometry and Algebraic Combinatorics, A. Barg and **O. Musin,** Editors, AMS Contemporary Math., vol. 625, 2014
2. **O. R. Musin**, Geometric problems of sphere packings and related topics, Monograph, Steklov Math Institute, 110 pages, 2013 (in Russian)
3. Interaction of cartography and geoinformatics, A. M. Berlyant and **O.R. Musin** (eds), Scientific World, Moscow, 2000 (in Russian)
4. A.M. Berlyant, V.O. Mamaev, and **O.R Musin** (Eds.), The Black Sea GIS. Moscow, Astrea Press, 1999.
5. A.M. Berlyant, O.R. Musin, and T.V. Sobchuk. Cartographic Generalization and Fractal Geometry, Moscow, Astrea, 147 p., 1998 (in Russian).
6. V.O. Mamaev, and **O.R. Musin** (Eds.) Black Sea GIS. CD-Rom, *Black Sea Environmental Programme,* UN Publications, 1997.
7. Sadovnichy V.A., Antoniou I., Belokurov V.V., Berlyant A.M., Grinchuk M.I., Kosikov A.G., Koshel S.M., **Musin O.R.**, Seleznjev O.V., Staroverov V.M., Segmentation and geometric transformations of digital images, MSU press, 1997.
8. V.A. Sadovnichy, M.I. Grinchuk, **O.R. Musin,** O.V. Seleznev, V.M. Staroverov. Structures and Singularities in Image Processing I, II. Moscow State University Press, 1995, 1996.

Chapters in books and collected papers [C]

1. M. M. Bouniaev, N. P. Dolbilin, **O. R. Musin,** and A. S. Tarasov, Geometrical Problems Related to Crystals, Fullerenes, and Nanoparticle Structure, *Springer Proc. Math. Statist.*, **124** (2016), 139–152.
2. **O. R. Musin**, Kissing problems in three and four dimensions, "First Yaroslavl Summer School on Discrete and Computational Geometry", YarSU Press, 2013, p. 164–193.
3. **O. R. Musin**, Positive definite functions in distance geometry, *European Congress of Mathematics Amsterdam, 14-18 July, 2008,* 115–134, EMS Publ., 2010
4. **O.R. Musin.** Generalizations of the four–vertex theorem, regular and shellable triangulations, in *Low–Dimensional Topology and Combinatorial Group Theory,* Kiev, IMNAS, 261–271. 2000.
5. **O. R. Musin**, Structural lines and digital elevation models, in *Interaction of cartography and geoinformatics*, pp. 21-34, Scientific World, Moscow, 2000 (in Russian).
6. Sadovnichy V.A., Antoniou I., Koshel S.M., **Musin O.R.**, Seleznjev O.V., Staroverov, Elimination of geometric distortions in digital images of remote sensing, in *Selected Topics of Mathematics, Mechanics and Applications*, MSU press, 1999, pp. 216–229.
7. V.A. Sadovnichy, **O. R. Musin** and B.A. Novakovskiy, Modeling of Phobos' surface, in *Selected Topics of Mathematics, Mechanics and Applications*, MSU press, 1999, pp. 411–437.
8. V.O. Mamaev, D.G. Aubrey D.G., **O.R. Musin.** GIS for Regional Seas Programmes: A Case Study: The Black Sea. In: *S.T. Besiktepe, Ü. Ünlüata, Bologa A.S. (eds), Environmental Degradation of the Black Sea: Challenges and Remedies. NATO Science Series (2. Environmental Security),* vol 56. Springer, Dordrecht, pp. 303–316, 1999.
9. **O.R. Musin.** Construction of the Voronoi diagram and secondary polytope, in *Voronoi impact on modern science. Book 2,* Kiev, IMNAS, pp. 105-114, 1998.

10. **O. R. Musin**, Properties of the Delaunay triangulation, *Proc. 13th Annu. ACM Sympos. Comput. Geom.,* ACM Press, 424-426, 1997.

11. **O. R. Musin** and V.S. Tikunov. Spatial and meaningful aspects of generalization, in *GIS in Asia. Selected Papers of the Asia GIS/LIS AM/FM and Spatial Analysis Conference,* 49–62, 1996.

12. V.A. Sadovnichy, V.P. Belov, **O.R. Musin**, B.A. Novakovskiy et al. Digital elevation model of Phobos' surface, in *Television Investigation of Phobos,* Moscow: Nauka, pp. 31-39, 1994.

13. **O. R. Musin** and S.N. Serbenyuk, Digital models of continuous and discrete geofields. in *Spatial databases for mapping*, K.A. Salischev (ed.), MSU press, 1987, 156–170.

Talks at seminars and research conferences

Every year I give talks at least at five research seminars and colloquiums and at least at three international workshops. In particular, from 2011 I gave over 60 conference presentations.

One of the most important presentations in my scientific career was invited talk at the European Congress of Mathematics, Amsterdam, 14–18 July, 2008 (http://www.5ecm.nl/program.html).

Here is a list of my invited talks in 2016–2017 and 2017–2018 academic years.

International workshop on Algebraic Topology and Geometric Topology, August 9–13, 2018, Dalian University of Technology, Dalian, China

The 5th China–Russia conference on knots and related topics, August 1–7, 2018, Dalian University of Technology, Dalian, China

2018 International Conference on Topology and its Applications, July 7–11, 2018, Nafpaktos, Greece.

International conference "Algebraic Topology, Combinatorics, and Mathematical Physics", May 24–30, 2018, Moscow, Russia

IITP Seminar "Discrete and Computation Geometry", May 22, 2018, Moscow

International workshop "Computation and Optimization of Energy, Packing, and Covering", Apr 9–13, 2018, ICERM, Brown University, Providence, RI

The fourteenth Graduate Student Combinatorics Conference (GSCC), UT Dallas, April 6-8, 2018, Dallas, TX [Keynote speaker]

AMS Sectional Meeting, March 16–18, 2018, Ohio State University, Columbus, OH

52nd Spring Topology and Dynamical Systems Conference, March 14–17, 2018, Auburn University, Auburn, AL (two talks)

Seminar of ICERM Program "Point Configurations", March 5, 2018, Brown University, Providence, RI

IITP Seminar "Discrete and Computation Geometry", December 19, 2017, Moscow

UTRGV Pure Math seminar, October 20, 2017.

Moscow Seminar "Discrete and Computational Geometry", Moscow, Russia, August 22, 2017

International Conference "Advances in Fair Division, August 9–11, 2017; St. Petersburg, Russia

Mathematical Congress of the Americas, July 24–28, 2017, Montreal, Canada.

Cornell Conference on Rigidity: Stability of Structures, Large and Small, July 20–22, 2017, Cornell University, Ithaca, USA

"Recent Advances in Discrete Geometry and Analytic Aspects of Convexity", May 21–26, 2017, Banff International Research Station, Canada

"Discrete Geometry Fest", May 14–19, 2017, Renyi Institute, Budapest, Hungary

Stony Brook Mathematics Colloquium, February 9, 2017

Joint Mathematics Meetings, AMS Special Session Discrete Geometry and Convexity, Atlanta, Georgia, January 4–7, 2017

Moscow Seminar "Discrete and Computational Geometry", Moscow, Russia, December 20, 2016

Dalian Winter School on Computational Topology, Dalian, China, December 5–20, 2016

The University of Oklahoma Mathematics Karcher Colloquium, November 17, 2016

International Workshop on Algebraic Combinatorics, October 28–31, 2016, Anhui University, China

"Transversal, Helly and Tverberg type Theorems in Geometry, Combinatorics and Topology III", October 23–28, 2016; Casa Matematica Oaxaca (CMO), Mexico

International workshop "Soft packings, nested clusters, and condensed matter", September 19–23, 2016; American Institute of Mathematics, San Jose, USA

Selected conference proceedings

O. R. Musin, Circle actions on 4-manifolds, in *Algebraic topology, combinatorics and mathematical physics: International conference on occasion of Victor Buchstaber's 75th birthday,* Moscow, May 24 – June 1, 2018; – M., Steklov Math Inst. of RAS, 88–89.

O. R. Musin, Graph of weights of circle actions, in *2018 International Conference on Topology and its Applications,* University of Patras, Greece, 153–155.

O. R. Musin, Towards resolving the densest sphere packing conjecture in four dimensions, *Discrete Geometry Fest, May 15–19, 2017, Budapest*:
`www.youtube.com/watch?v=iiQzvEk1A4I&list=PLHFItBPFxvH5eKl16_MXQqhpDRFScZai-&index=13`

O. R. Musin, Problems on optimal sphere packings, *Proceedings of International Conference on Algebra, Analysis and Geometry, June 26– July 2, 2016, Kazan,* pp. 250–251, Kazan State University

O. R. Musin, Discrete versions of fixed point theorems, *Proc. XII International Conference "Discrete Mathematics and its applications", Moscow State University, June 20–25 2016*, pp. 260–262 (in Russian).

O. R. Musin, Five Essays on the Lászlo Fejes Tóth Geometry, *International Conference "Intuitive Geometry", June 22–28, 2015, Budapest, Hungary*.

O. R. Musin, Extreme sphere packings problems, *Proceedings XIII International conference "Algebra, Number Theory and Discrete Geometry", 25–30 May, 2015,* pp. 40–42, Tula, Russia.

O. R. Musin, Extreme problems of sphere packings and irreducible contact graphs, *International Conference "Sphere Packings, Lattices, and Designs", October 27-31, 2014, Vienna, Austria*

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Direction of Theses and Mentoring post–docs

Member of several Master's and Ph.D. Theses Committees in Mathematics, Computer Science, Cartography & Geoinformatics

Directed five Ph.D. Thesis and more than 30 Master's Thesis, in particular

Tatiana Sobchuk (Geoinformatics) 1996 : Cartographic Generalization of Linear Objects Using Fractal Characteristics. Ph.D. Moscow State University.

Sergey Koshel (Geoinformatics) 2004: Digital Elevation Models in GIS. Ph.D. Moscow State University. Currently a faculty member at the Moscow State University, Russia.

MS UTB: Wiktor Mogilski (2009: Four-vertex theorem), Apolinar Zapata (2010: Driving direction and shortest path on graphs), Alexandra Schelkunova (2013: Computational Biology), Heba Ouda (2016: Point location problems)

UTB post-docs: Makoto Tagami (2009), Hiroshi Nozaki (2009-2010), Masanori Sawa (2011), Arseniy Akopyan (2009-2011), Alexey Tarasov (2009, 2011-2013)