LIST OF PAPERS BY NÁNDOR SIMÁNYI

November, 2022

1. Algebraic Invariants in the Theory of Shape, *Matematikai Lapok*, **30**, No. 1-3. (1978-1982), pp. 135-153. (In Hungarian.)
2. Random walks with internal states and the Fourier law of heat conduction, *Proc. of the American-Hungarian Workshop on Multivariate Analysis*, Stanford, (1984), 28-31. (Jointly with A. Krámli and D. Szász.)
3. Random walks with internal degrees of freedom. III. Stationary probabilities, *Probab. Th. Rel. Fields.* **72** (1986), 603-617. (Jointly with A. Krámli and D. Szász.)
4. Heat conduction in caricature models of the Lorentz gas, *J. of Statistical Physics*, **46** (1987), 303-318. (Jointly with A. Krámli and D. Szász.)
5. Two-particle billiard system with arbitrary mass ratio, *Ergodic theory and dynamical systems*, Vol. **9** (1989), 165-171. (Jointly with M. P. Wojtkowski.)
6. Towards a proof of recurrence for the Lorentz process, *Banach Center Publications*, Volume **23**, Dynamical Systems and Ergodic Theory, pp. 265-276 (1989).
7. Dispersing billiards without focal points on surfaces are ergodic, *Commun. Math. Phys.* **125**, 439-457 (1989). (Jointly with A. Krámli and D. Szász.)
8. Ergodic properties of semi-dispersing billiards. I. Two cylindric scatterers in the 3-D torus, *Nonlinearity*, **2** (1989), pp. 311-326. (Jointly with A. Krámli and D. Szász.)
9. The K-property of three billiard balls, *Annals of Mathematics*, **133** (1991), 37-72. (Jointly with A. Krámli and D. Szász.)
10. A ‚Transversal' Fundamental Theorem for Semi–Dispersing Billiards, *Commun. Math. Phys.* **129**, 535-560 (1990). (Jointly with A. Krámli and D. Szász.)
11. Dual Polygonal Billiards and Necklace Dynamics, *Commun. Math. Phys.* **143**, 431-449 (1992). (Jointly with E. Gutkin.)
12. The K–Property of Four Billiard Balls, *Commun. Math. Phys.* **144**, 107-148 (1992). (Jointly with A. Krámli and D. Szász.)
13. The K–Property of N Billiard Balls I. *Inventiones Mathematicae* **108**, 521-548 (1992).
14. The K–Property of N Billiard Balls II. Computation of Neutral Linear Spaces, *Inventiones Mathematicae* **110**, 151-172 (1992).
15. The K-Property of 4-D Billiards with Non-Orthogonal Cylindric Scatterers, *Journal of Statistical Physics*, Vol. **76**, Nos. 1/2, 587-604 (1994). (Jointly with D. Szász).
16. The Boltzmann-Sinai Ergodic Hypothesis for Hard Ball Systems, *Workshop on Dynamical Systems and Related Topics. 1994 Meetings University of Maryland & Penn State.* Abstract of Talks, 1994.
17. The K-Property of Hamiltonian Systems with Restricted Hard Ball Interactions, *Mathematical Research Letters*, **2**, No. 6, 751-770, (1995). (Jointly with D. Szász.)
18. The Ergodicity of Sinai's Pencase Model, *Workshop on Dynamical Systems and Related Topics. 1995 Meetings University of Maryland & Penn State.* Abstract of Talks, 1995.
19. Ball-avoiding theorems, *Ergodic Theory and Dynamical Systems Abstracts,* eds. K. Baranski, F. Przytycki. Stefan Banach International Mathematical Center 1995.

20. The Characteristic Exponents of the Falling Ball Model, *Communications in Mathematical Physics* **182**, 457-468 (1996).

21. Studying Dynamical Systems With Algebraic Tools, *Progress in Mathematics*, Vol. **169**, pp. 200–210. Birkhäuser Verlag, 1998.

22. Rotation-symmetric Surfaces of Soap Film and the Theorem of Charles Delaunay. *Century 2 of KöMaL* (Published by the Roland Eötvös Physical Society), Vol.**2**, pp. 181–190. (Jointly with Péter Gnädig.)

23. Non-integrability of Cylindric Billiards, in "Dynamical systems: From crystal to chaos." Editors: J.-M. Gambaudo, P. Hubert, P. Tisseur, S. Vaienti. World Scientific Publishing Co. 2000, pp. 303–306.

24. Hard Ball Systems Are Completely Hyperbolic, *Annals of Mathematics,* **149, No. 1**, 35–96 (1999), arXiv:math.DS/9704229 (Jointly with D. Szász.)

25. Ergodicity of Hard Spheres in a Box, *Ergodic Theory and Dynamical Systems* Vol. **19** (1999), 741–766.

26. Non-integrability of Cylindric Billiards and Transitive Lie Group Actions. *Ergodic Theory and Dynamical Systems*, Vol. **20** (2000), 593-610. (Jointly with D. Szász)

27. Hard Ball Systems and Semi-Dispersive Billiards: Hyperbolicity and Ergodicity. *Encyclopedia of Mathematical Sciences*, **Vol. 101**, Mathematical Physics II. Edited by D. Szász, Springer Verlag 2000, pp. 51–88.

28. The Complete Hyperbolicity of Cylindric Billiards. *Ergodic theory and dynamical systems,* Vol. **22** (2002), 281–302. arXiv:math.DS/9906139

29. Proof of the Boltzmann–Sinai Ergodic Hypothesis for Typical Hard Disk Systems. *Inventiones Mathematicae,* Vol. **154** (2003), No. 1, pp. 123-178. arXiv:math.DS/0008241

30. Proving The Ergodic Hypothesis for Billiards With Disjoint Cylindric Scatterers. *Nonlinearity,* Vol. **17** (2004), pp. 1-21. arXiv:math.DS/0207223

31. Proof of the Ergodic Hypothesis for Typical Hard Ball Systems. *Annales Henri Poincaré* **5** (2004), pp. 203–233. arXiv:math.DS/0210280

32. On the complexity of curve fitting algorithms. (Jointly with N. Chernov and C. Lesort.) *Journal of Complexity*, Vol. **20**, Issue 4, August 2004, pp. 484-492. arXiv:cs.CC/0308023

33. A Note on the Size of the Largest Ball Inside a Convex Polytope. *Period. Math. Hungar.* Vol. 51, No. 2 (December 2005), pp. 15-18. (Jointly with I. Bárány.) arXiv:math.MG/0505301, DOI: 10.1007/s10998-005-0026-4

34. Rotation sets of billiards with one obstacle. *Commun. Math. Phys.* Vol. 266, No. 1 (August, 2006), pp. 239-265. (Jointly with A. Blokh and M. Misiurewicz) arXiv:math.DS/0508300

35. Flow-invariant hypersurfaces in semi-dispersing billiards. (Jointly with N. I. Chernov.) *Annales Henri Poincare* **8** (2007), 475-483. DOI 10.1007/s00023-006-0313-5

36. Upgrading Local Ergodic Theorem for planar semi-dispersing billiards (Jointly with N. Chernov.) *J. Stat. Phys.*, **139 No. 3** (2010), 355-366. DOI: 10.1007/s10955-010-9927-6

37. Conditional Proof of the Boltzmann-Sinai Ergodic Hypothesis. *Inventiones Mathematicae,* Vol. 177, No. 2 (August 2009), pp. 381–413, DOI: 10.1007/s00222-009-0182-x

38. Sums of squares and orthogonal integral vectors. *Journal of Number Theory* **Vol. 132,** Issue 1, January 2012, Pages 37-53. (Joint work with Lee M. Goswick, Emil W. Kiss, and Gábor Moussong) http://dx.doi.org/10.1016/j.jnt.2011.07.001

39. Homotopical Complexity of 2D Billiard Orbits, *Studia Sci. Math. Hungar.* 48(4), 540-562 (2011). (Jointly with Lee M. Goswick), arXiv:1008.1623, DOI:10.1556/SScMath.48.2011.4.1191

40. G. Moussong, N. Simányi, Circle decompositions of surfaces, *Topology and its Applications* 158 (2011) 392396. doi:10.1016/j.topol.2010.11.015

41. N. Chernov, A. Korepanov, N. Simanyi, Stable regimes for hard disks in a channel with twisting walls, *Chaos* Vol.22, Issue 2, June 2012.

42. Singularities and nonhyperbolic manifolds do not coincide. *Nonlinearity* **26 (2013)** 1703-1717. http://dx.doi.org/10.1088/0951-7715/26/6/1703

43. Matthew P. Clay, Nándor J. Simányi, Rényi's Parking Problem Revisited, *Stochastics and Dynamics,* Vol. **16, No. 2** (2016). DOI: 10.1142/S0219493716600066

44. Simnyi N. (2019) Further Developments of Sinais Ideas: The BoltzmannSinai Hypothesis. In: Holden H., Piene R. (eds) The Abel Prize 2013-2017. The Abel Prize. Springer, Cham https://doi.org/10.1007/978-3-319-99028-6_12

45. Caleb C. Moxley, Nandor J. Simanyi Homotopical complexity of a $3D$ billiard flow, in Dynamical Systems, Ergodic Theory, and Probability: in Memory of Kolya Chernov, Contemporary Mathematics, vol. 698, Amer. Math. Soc., Providence, RI, 2017, pp. 169-180. http://dx.doi.org/10.1090/conm/698/13981

46. Caleb C. Moxley, Nándor Simányi, Homotopical complexity of a billiard flow on the 3D flat torus with two cylindrical obstacles, *Ergodic Theory and Dynamical Systems,* **Vol. 39, No. 4,** April 2019, pp. 1071-1081. DOI: https://doi.org/10.1017/etds.2017.62

47. Nándor Simányi (2022) Conditional Proof of the Ergodic Conjecture for Falling Ball Systems, *Submitted for publication.* DOI: https://doi.org/10.48550/arXiv.2211.10874