

## *List of selected publications of Jan J. Sławianowski*

### **The most important books and contributions to books**

1. J. J. Sławianowski, V. Kovalchuk, *Schrödinger Equation as a Hamiltonian System, Essential Nonlinearity, Dynamical Scalar Product and Some Ideas of Decoherence*, In: Advances in Quantum Mechanics, P. Bracken (Ed), InTech, Rijeka, 2013, pp. 81–103.
2. B. Gołubowska, V. Kovalchuk, E. E. Rożko, J. J. Sławianowski, *Some Constraints and Symmetries in Dynamics of Homogeneously Deformable Elastic Bodies*, in Geometry, Integrability and Quantization XIV, I. M. Mladenov, A. Ludu and A. Yoshioka (Eds), Avangard Prima, Sofia, 2013, pp. 103–115.
3. J. J. Sławianowski, A. Martens, *The Dynamics of the Field of Linear Frames and Gauge Gravitation*, In: Geometry, Integrability and Quantization XIV, I. M. Mladenov, A. Ludu and A. Yoshioka (Eds), Avangard Prima, Sofia, 2013, pp. 201–214.
4. V. M. Vassiliev, P. A. Djondjorov, M. T. Hadzilazova, I. M. Mladenov, J. J. Sławianowski, *Equilibrium Shapes of Fluid Membranes and Carbon Nanostructures*, In: Mechanics of Nanomaterials and Nanotechnology, Series in Applied Mathematics and Mechanics 3, 2012, pp. 153–185.
5. J. J. Sławianowski, *Order of Time Derivatives in Quantum-Mechanical Equations*, In: Measurements in Quantum Mechanics, M. R. Pahlavani (Ed.), InTech, Rijeka, 2012, pp. 57–74.
6. J. J. Sławianowski, *Quantization of Affine Bodies: Theory and Applications in Mechanics of Structured Media*, In: Material Substructures in Complex Bodies. From Atomic Level to Continuum, G. Capriz, P. M. Mariano (Eds), Elsevier, Amsterdam, 2007, pp. 80–162.
7. J. J. Sławianowski, *Teleparallelism, Modified Born-Infeld Nonlinearity and Space-Time as a Micromorphic Ether*, In: Topics in Mathematical Physics, General Relativity and Cosmology, in Honor of J. Plebański, H. Garcia-Compean, B. Mielnik, M. Montesinos and M. Przanowski (Eds), World Scientific Publishing, New Jersey-London, 2006, pp. 441–451.
8. A. A. Burov, I. Motte, J. J. Sławianowski, S. Y. Stepanov, *Zadachi Issledovaniya Ustoichivosti I Stabilizatsii Dvizhenija*, Vychislitelnyj Tsentr Rossiskoj Akademii Nauk, 2006, pp. 93–106.

9. J. J. Sławianowski, V. Kovalchuk, A. Martens, B. Gołubowska, E. E. Rożko, *Dynamical systems with Internal degrees of freedom in Non-Euclidean Spaces*, IFTR Reports **8**, Warsaw, 2006, pp. 1–129.
10. J. J. Sławianowski, V. Kovalchuk, A. K. Sławianowska, B. Gołubowska, A. Martens, E. E. Rożko, Z. J. Zawistowski, *Invariant Geodetic Systems on Lie groups and Affine Model of Internal and Collective Degrees of Freedom*, IFTR Reports **7**, Warsaw, 2004, pp. 1–122.
11. J. J. Sławianowski, *Quantum Mechanics*, In: Foundations of Mechanics, S. Bałański, R. Gutowski, J. J. Sławianowski, K. Wilmański, Cz. Woźniak (Autors), H. Zorski (Ed.), Polish Scientific Publishers, Warszawa / Elsevier, Amsterdam-Oxford-New York, Tokyo, 1992, pp. 265–403.
12. J. J. Sławianowski, *Geometry of Phase Spaces*, John Wiley and Sons, Chichester-New York-Brisbane-Toronto-Singapore, 1991.
13. J. J. Sławianowski,  $GL(n, \mathbb{R})$ , *Tetrads, and Generalized Space-Time Dynamics*, In: Differential Geometry, Group Representations and Quantization, Lecture Notes in Physics **379**, J. D. Hennig, W. Luecke and J. Tolar (Eds), Springer-Verlag, Berlin-Heidelberg, 1991, pp. 31–42.
14. J. J. Sławianowski, *Quantum Mechanics*, In: Foundations of Mechanics, (S. Bałański, R. Gutowski, J. J. Sławianowski, K. Wilmański, Cz. Woźniak (Autors), H. Zorski (Ed.), Polish Scientific Publishers, Warsaw, 1985, pp. 250–375 (in Polish).
15. J. J. Sławianowski, *Analytical Mechanics of Deformable Bodies*, Polish Scientific Publishers, Warsaw-Poznan, 1982 (in Polish).
16. J. J. Sławianowski, *Affine Model of Internal Degrees of Freedom in a Non-Euclidean Space*, In: Differential Geometric Methods in Mathematical Physics, Lecture Notes in Physics **139**, H. D. Doebner (Ed.), Springer, Berlin-Heidelberg, 1981, pp. 259–279.
17. J. J. Sławianowski, *Uncertainty, Correspondence and Quasiclassical Compatibility*, In: The Uncertainty Principle and Foundations of Quantum Mechanics, W. C. Price and S. S. Chissick (Eds), John Wiley and Sons, London-New York-Sydney-Toronto, 1977, pp. 147–188.
18. J. J. Sławianowski, *Geometry of Phase Spaces*, Polish Scientific Publishers, Warsaw, 1975 (in Polish).
19. J. J. Sławianowski, *Analytical Mechanics of Homogeneous Deformations*, IFTR Reports **8**, 1973 (in Polish).
20. J. J. Sławianowski, *Causality in Quantum Mechanics*, General Knowledge, Warsaw, 1969 (in Polish).

## **Some annual and other regularly edited literature positions and contributions to books connected with the international collaboration**

1. E. E. Rożko, J. J. Sławianowski, *Essential Nonlinearity in Field Theory and Continuum Mechanics. Second- and First-Order Generally-Covariant Models*, In: Geometry, Integrability and Quantization, I. M. Mladenov, A. Ludu and A. Yoshioka (Eds), Avangard Prima, Sofia, 2014, pp. 218–241.
2. J. J. Sławianowski, A. Martens, *The Dynamice of the Field of Linear Frames and Gauge Gravitation*, In: Geometry, Integrability and Quantization, I. M. Mladenov, A. Ludu and A. Yoshioka (Eds), Avangard Prima, Sofia, 2013, pp. 201–214.
3. B. Gołubowska, V. Kovalchuk, E. E. Rożko, J. J. Sławianowski, *Some Constraints and Symmetries in Dynamics of Homogeneously Deformable Affine Bodies*, In: Geometry, Integrability and Quantization, I. M. Mladenov, A. Ludu and Y. Yoshioka (Eds), Avangard Prima, Sofia, 2013, pp. 103–115.
4. J. J. Sławianowski, *Systems of Hamilton–Jacobi Equations in Terms of Symplectic and Contact Geometry*, In: Classical and Celestial Mechanics, Selected Papers, L. Gadomski, P. Krasilnikov and A. Prokopenya (Eds), Collegium Mazovia, Siedlce, 2012, pp. 170–193.
5. J. J. Sławianowski, B. Gołubowska, *Hamiltonian Systems on Matrix Manifolds and Their Applications*, In: Classical and Celestial Mechanics, Selected Papers, L. Gadomski, P. Krasilnikov and A. Prokopenya (Eds), Collegium Mazovia, Siedlce, 2012, pp. 158–169.
6. B. Gołubowska, V. Kovalchuk, A. Martens, E. E. Rożko, J. J. Sławianowski, *Some Strange Features of the Galilei Group*, In: Geometry, Integrability and Quantization, I. M. Mladenov, A. Ludu and A. Yoshioka (Eds), Avangard Prima, Sofia, 2012, pp. 150–175.
7. J. J. Sławianowski, *Symmetries and Constraints in Mechanics of Continua*, In: Mathematical Methods in Continuum Mechanics, K. Wilmański, B. Michalak, J. Jędrysiak (Eds), Technical University of Łódź, Łódź, 2011, pp. 195–211.
8. J. J. Sławianowski, V. Kovalchuk, A. Martens, B. Gołubowska, E. E. Rożko, *Quasiclassical and Quantum Dynamic of Systems of Angular Momenta*, In: Geometry, Integrability and Quantization, I. M. Mladenov, G. Vilasi and A. Yoshioka (Eds), Avangard Prima, Sofia, 2011, pp. 70–155.
9. J. J. Sławianowski, V. Kovalchuk, *Symmetry and Geometrically Justified Nonlinearities in Mechanics and Field Theory*, In: Problems of Stability and

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10. J. J. Ślawianowski, V. Kovalchuk, *Search for the Geometrodynamical Gauge Group. Hypotheses and some Results*, In: Geometry, Integrability and Quantization, I. M. Mladenov (Ed.), Sofia, 2008, pp. 66–132.
  11. J. J. Ślawianowski, *Geometrically Implied Nonlinearities in Mechanics and Field Theory*, In: Geometry, Integrability and Quantization, I. M. Mladenov and M. de Leon (Eds), Softex, Sofia, 2007, pp. 48–118.
  12. J. J. Ślawianowski, *Search for Fundamental Models with Affine Symmetry: Some Results, Some Hypotheses and Some Essay*, In: Geometry, Integrability and Quantization, I. M. Mladenov, A. C. Hirshfeld (Eds), Softex, Sofia, 2005, pp. 126–172.
  13. J. J. Ślawianowski, *Classical and Quantum Collective Dynamics of Deformable Objects. Symmetry and Integrability Problems*, In: Geometry, Integrability and Quantization, I. M. Mladenov (Ed.), Softex, Sofia, 2004, pp. 81–108.
  14. J. J. Ślawianowski, V. Kovalchuk, *Invariant Geodetic Problems on the Projective Group  $PR(n, \mathbb{R})$* , In: Proceedings of Institute of mathematics of NAS of Ukraine, A. G. Nikitin, V. M. Boyko, R. O. Popovych and I. A. Yechorchenko (Eds), **50**, Part 2, Kyiv, 2004, pp. 955–960.
  15. J. J. Ślawianowski, *Quantum and Classical Models Based on  $GL(n, \mathbb{R})$ -Symmetry*, In: Quantum Theory and Symmetries, E. Kapuścik, A. Horzela (Eds), World-Scientific, New Jersey-London-Singapore-Hongkong, 2002, pp. 582–588.
  16. J. J. Ślawianowski, *Nonlinear Vibrations of Rigid Bodies. Projective Correspondence Between Rigid Body and Material Point Mechanics*, In: Proceedings of the 2nd Polish-German Workshop on Dynamical Problems in Mechanical Systems, R. Bogacz, J. Luecker and K. Popp (Eds), IFTR-Editions, Warsaw, 1991, pp. 25–34.
  17. J. J. Ślawianowski, *Controlling Agents in Dynamics of Rigid Bodies*, In: Dynamical Problems in Mechanical Systems, R. Bogacz and K. Popp (Eds), Proceedings Polish–German Workshop, IFTR, Warsaw, 1989, pp. 29–38.
  18. J. J. Ślawianowski, *Wigner Functions and the Limit Transition Between Quantum and Classical Statistics*, In: Statistical Theories in Solids, Fluids and Gases, Polish Academy of Sciences Publishers, R. Herczyński and I. Pieńkowska (Eds), Wroclaw, 1974, pp. 193–216 (in Polish).

## The most important papers in journals

1. B. Gołubowska, V. Kovalchuk, J. J. Sławianowski, *Constraints and Symmetry in Mechanics of Affine Motion*, *J. Geom. Phys.* **78** (2014) 59–79.
2. E. E. Rożko, J. J. Sławianowski, *Essential Nonlinearity in Field Theory and Continuum Mechanics. Second- and First-Order Generally-Covariant Models*, *J. Geom. Symmetry Phys.* **34** (2014) 51–76.
3. G. Ali, R. Beneduci, G. Mascalì, F. E. Schroeck, J. J. Sławianowski, *Some Mathematical Considerations on Solid State Physics in the Framework of the Phase Space Formulation of Quantum Mechanics*, *Int. J. Theor. Phys.* **53** (2014) 3546–3574.
4. D. Blackmore, A. K. Prykarpatski, N. N. Bogolubov (Jr), J. J. Sławianowski, *Mathematical Foundations of the Classical Maxwell-Lorentz Electrodynamic Models in the Canonical and Lagrangian Hamiltonian Formalism*, *Universal J. Phys. Appl.* **1** (2013) 160–178.
5. J. J. Sławianowski, V. Kovalchuk, A. Martens, B. Gołubowska, E. E. Rożko, *Generalized Weyl-Wigner-Moyal-Ville Formalism and Topological Groups*, *Math. Methods Appl. Sci.* **35** (2012) 17–42.
6. J. J. Sławianowski, V. Kovalchuk, A. Martens, B. Gołubowska, E. E. Rożko, *Essential Nonlinearity Implied by Symmetry Group. Problems of Affine Invariance in Mechanics and Physics*, *Discret. Contin. Dyn. Syst. B* **17** (2012) 699–733.
7. J. J. Sławianowski, B. Gołubowska, E. E. Rożko,  $\text{SO}(4, \mathbb{R})$ , *Related Groups and Three-Dimensional Two-Gyroscopic Problems*, *Acta Phys. Pol. B* **43** (2012) 19–49.
8. B. Głubowska, V. Kovalchuk, A. Matens, E. E. Rożko, J. J. Sławianowski, *Some Strange Features of the Galilei Group*, *J. Geom. Symmetry Phys.* **26** (2012) 33–59.
9. J. J. Sławianowski, V. Kovalchuk, A. Martens, B. Gołubowska, E. E. Rożko, *Mechanics of Systems of Affine Bodies. Geometric Foundations and Applications in Dynamics of Structured Media*, *Math. Methods Appl. Sci.* **34** (2011) 1512–1540.
10. J. J. Sławianowski, V. Kovalchuk, A. Martens, B. Gołubowska, E. E. Rożko, *Quasiclassical and Quantum Systems of Angular Momentum, Part III. Group Algebra of  $\text{SU}(2)$ , Quantum Angular Momentum and Quasiclassical Asymptotics*, *J. Geom. Symmetry Phys.* **23** (2011) 59–95.

11. J. J. Sławianowski, V. Kovalchuk, A. Martens, B. Gołubowska, E. E. Rożko, *Quasiclassical and Quantum Systems of Angular Momentum, Part II. Quantum Mechanics on Lie Groups and Methods of Group Algebras*, J. Geom. Symmetry Phys. **22** (2011) 67–94.
12. J. J. Sławianowski, V. Kovalchuk, A. Martens, B. Gołubowska, E. E. Rożko, *Quasiclassical and Quantum Systems of Angular Momentum, Part I. Group Algebras as a Framework for Quantum-Mechanical Models with Symmetries*, J. Geom. Symmetry Phys. **21** (2011) 61–94.
13. A. Martens, J. J. Sławianowski, *Affinely-Rigid Body and Oscillatory Dynamical Models on  $GL(2, \mathbb{R})$* , Acta Phys. Pol. B **41** (2010) 1847–1880.
14. J. J. Sławianowski, V. Kovalchuk, A. Martens, B. Gołubowska, E. E. Rożko, *Quantized Excitations of Internal Affine Modes and their Influence on Raman Spectra*, Acta Phys. Pol. B **41** (2010) 165–218.
15. J. J. Sławianowski, V. Kovalchuk, *Schrödinger and Related Equations as Hamiltonian Systems, Manifolds of Second-Order Tensors and New Ideas of Nonlinearity in Quantum Mechanics*, Rep. Math. Phys. **65** (2010) 29–76.
16. J. J. Sławianowski, B. Gołubowska, *Motion of Test Bodies with Internal Degrees of Freedom in Non-Euclidean Spaces*, Rep. Math. Phys. **65** (2010) 379–422.
17. J. J. Sławianowski, *Geometric Nonlinearities in Field Theory, Condensed Matter and Analytical Mechanics*, Condens. Mat. Phys. **13** (2010) 43103.
18. V. Kovalchuk, J. J. Sławianowski, *Hamiltonian Systems Inspired by the Schrödinger Equation*, SIGMA **4** (2008) 46–54.
19. J. J. Sławianowski, *Geometric Models of Internal Structure and Their Group Analysis*, 6-th International Congress on Industrial and Applied Mathematics, **354**, Zurich, Switzerland, 16–20 July 2007.
20. A. A. Burov, I. Motte, J. J. Sławianowski, S. J. Stepanov, *About the Stability and Bifurcations of Stationary Motions of the Dumbbell on Sphere* (in Russian), Russian Academy of Sciences, Computing Center A. A. Dorodnitsyn, In: Problems of Studying Stability and Stabilization of Motion, Moscow, 2006, 93–106.
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22. J. J. Sławianowski, *Quantum Systems on Linear Groups*, Int. J. Theor. Phys. **44** (2005) 2027–2037.
23. J. J. Sławianowski, V. Kovalchuk, A. K. Sławianowska, B. Gołubowska, A. Martens, E. E. Rożko, Z. J. Zawistowski, *Affine Symmetry in Mechanics of Collective and Internal Modes. Part II. Quantum Models.*, Rep. Math. Phys. **55** (2005) 1–45.

24. J. J. Sławianowski, V. Kovalchuk, A. K. Sławianowska, B. Gołubowska, A. Martens, E. E. Rożko, Z. J. Zawistowski, *Affine Symmetry in Mechanics of Collective and Internal Modes. Part I. Classical Models.*, Rep. Math. Phys. **54** (2004) 373–427.
25. J. J. Sławianowski, V. Kovalchuk, *Classical and Quantized Affine Physics. A Step Towards It.*, J. Nonlinear Math. Phys. Supplement **11** (2004) 157–166.
26. J. J. Sławianowski, *Geodetic Systems on Linear and Affine Groups. Classics and Quantization*, J. Nonlinear Math. Phys. Supplement **11** (2004) 130–137.
27. J. J. Sławianowski, V. Kovalchuk, *Invariant Geodetic Problems on the Affine Group and Related Hamiltonian Systems*, Rep. Math. Phys. **51** (2003) 371–379.
28. J. J. Sławianowski, *Linear Frames in Manifolds, Riemannian Structures and Description of Internal Degrees of Freedom*, Rep. Math. Phys. **51** (2003) 345–369.
29. J. J. Sławianowski, V. Kovalchuk, *Klein-Gordon-Dirac Equation, Physical Justification and Quantization Attempts*, Rep. Math. Phys. **49** (2002) 249–257.
30. J. J. Sławianowski, *Group-Theoretic Approach to Internal and Collective Degrees of Freedom in Mechanics and Field Theory*, Technische Mechanik **22** (2002) 8–13.
31. J. J. Sławianowski, *Internal Symmetries of Geometrodynamical Models*, Rep. Math. Phys. **48** (2001) 103–114.
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34. J. J. Sławianowski, A. K. Sławianowska, *Hamiltonian Systems on Linear Groups and One-Dimensional Lattices with Internal Parameters*, Machine Dynamics Problems, **20** (1998) 263–273.
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49. A. Trzęsowski, J. J. Sławianowski, *Global Invariance and Lie-Algebraic Description in the Theory of Dislocations*, Int. J. Theor. Phys. **29** (1990) 1239–1249.
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53. J. J. Sławianowski, *Generally Covariant Field Theories and Space-Time as a Micromorphic Continuum*, IFTR Reports **51** 1988.

54. J. J. Sławianowski, *Nonlinear Torsional Vibrations of Rigid Bodies*, Arch. Mech. **39** (1987) 663–682.
55. J. J. Sławianowski, *Algorithms for Reactions of Nonholonomic Constraints and Servo-Constraints*, Arch. Mech. **39** (1987) 645–662.
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