

Refereed Publications

Dmitry V. Strunin

Sole author of journal articles:

1. D.V. Strunin, Universality of turbulent dispersion in a steady flow in an open channel, *Quarterly Journal of Mechanics and Applied Mathematics* [Oxford University Press] Vol. 64, No. 2 (2011) pp. 197–214.
2. D.V. Strunin, Phase equation with nonlinear excitation for nonlocally coupled oscillators, *Physica D: Nonlinear Phenomena* [Elsevier] Vol. 238 (2009) pp. 1909–1916.
3. D.V. Strunin, Fluid flow between active elastic plates, *ANZIAM Journal (E)* (former Journal of Australian Mathematical Society, Series B) [Oxford University Press] Vol. 50 (2009) pp. C871–C883.
4. D.V. Strunin, Dynamical system approach and attracting manifolds in K-epsilon model of turbulent jet, *Bulletin of the Belgian Mathematical Society*, Vol. 15 (2008) pp. 935–946.
5. D.V. Strunin, Two-dimensional particle solution of the extended Hamilton–Jacobi equation, *ANZIAM Journal (E)* [Oxford University Press] Vol. 50 (2008) pp. C282–C291.
6. D.V. Strunin, Attractors in confined source problems for coupled nonlinear diffusion, *SIAM Journal on Applied Mathematics* [Soc. for Industrial and Applied Mathematics, USA] Vol. 67, No. 6 (2007) pp. 1654–1674.
7. D.V. Strunin, Similarity without diffusion: shear turbulent layer damped by buoyancy, *Journal of Engineering Mathematics* [Springer] Vol. 54 (2006) pp. 211–224.
8. D.V. Strunin, Nonlinear instability in generalized nonlinear phase diffusion equation, *Progress of Theoretical Physics Supplement* [Physical Soc. of Japan] No. 150 (2003) pp. 444–448.

9. D.V. Strunin, On characteristic times in generalized thermoelasticity, *Journal of Applied Mechanics* [American Soc. of Mechanical Engineers (ASME)] Vol. 68 (2001) pp. 816–817.
10. D.V. Strunin, Transition to self-similarity of diffusion of tracer in turbulent patch, *Journal of Engineering Mechanics* [American Soc. of Civil Engineers (ASCE)] Vol. 127 (2001) pp. 1089–1095.
11. D.V. Strunin, Computations of auto-solitary structures modelling extended elementary particles, *Computer Physics Communications* [Elsevier] Vol. 142 (2001) pp. 95–99.
12. D.V. Strunin, A transfer of a tracer in decaying turbulent layer, *Computer Physics Communications* [Elsevier] Vol. 142 (2001) pp. 333–337.
13. D.V. Strunin, Stable autosoliton of the action function as a particle-type structure, *Foundations of Physics* [Springer] Vol. 30 (2000) pp. 933–949.
14. D.V. Strunin, Autosoliton model of the spinning fronts of reaction, *IMA Journal of Applied Mathematics* [Oxford University Press] Vol. 63 (1999) pp. 163–177.
15. D.V. Strunin, The semiempirical equation for the nonstationary front of a solid-state exothermic reaction, *Physics-Doklady*, Vol. 40, No. 6 (1995) pp. 276–278 [English transl. from *Doklady Akademii Nauk*, Vol. 342, No. 5 (1995) pp. 612–614, in Russ.].
16. D.V. Strunin, Reorganisation of established gasless combustion modes in the field of the determining parameters, *Combustion, Explosion and Shock Waves* (1994) pp. 458–461 [English transl. from *Fizika Goreniya i Vzryva*, Vol. 29, No. 4 (1993) pp. 42–46, in Russ.].
17. D.V. Strunin, Transition to chaos in gasless combustion, *International Journal of Self-propagating High-temperature Synthesis* [Allerton Press] Vol. 1 (1992) pp. 207–210.
18. D.V. Strunin, On chaotization of oscillations of the combustion front of condensed systems involving melting, *Computational Mathematics and Mathematical Physics*, Vol. 31 (1991) pp. 45–50 [English transl. from

Zhurnal Vychislitel'noy Matematiki i Matematicheskoy Fiziki, Vol. 31, No. 4 (1991) pp. 543–550, in Russ.].

19. D.V. Strunin, Intermediate structures in problems of a phenomenological description of combustion waves, *Combustion, Explosion and Shock Waves* (1991) pp. 521–525 [English transl. from *Fizika Goreniya i Vzryva*, Vol. 26, No. 5 (1990) pp. 28–33, in Russ.].
20. D.V. Strunin, Mixing of passive tracer by the patch of turbulence, *Izvestiya of Academy of Sciences of the USSR, Atmospheric and Oceanic Physics*, Vol. 25, No. 7 (1989) pp. 565–568 [English transl. from *Izvestiya AN SSSR, Fizika Atmosfery i Okeana*, Vol. 25, No. 7 (1989) pp. 766–770, in Russ.].
21. D.V. Strunin, Stationary distributions of nutrients and phytoplankton in the ocean, *Oceanology*, Vol. 28, No. 5 (1988) pp. 648–651 [English transl. from *Okeanologiya*, Vol. 28, No. 5 (1988) pp. 835–839, in Russ.].

Joint author of journal articles:

22. D.J. Georgiev, A.J. Roberts and D.V. Strunin, Modelling turbulent flows from dam breaks using slow manifolds, *ANZIAM Journal (E)* [Oxford University Press] Vol. 50 (2009) pp. C1033–C1051.
23. D.J. Georgiev, A.J. Roberts and D.V. Strunin, Nonlinear dynamics on centre manifolds describing turbulent floods: k-omega model, *Discrete and Continuous Dynamical Systems - Supplement 2007* [American Inst. of Mathematical Sciences] pp. 419–428.
24. D.J. Georgiev, A.J. Roberts and D.V. Strunin, The dynamics of the vertical structure of turbulence in flood flows, *ANZIAM Journal (E)* [Oxford University Press] Vol. 48 (2007) pp. C573–C590.
25. D.V. Strunin and S.A. Suslov, Phenomenological approach to 3D spinning combustion waves: numerical experiments with a rectangular rod, *International Journal of Self-propagating High-temperature Synthesis* [Allerton Press] Vol. 14 (2005) pp. 33–39.

26. R.V.N. Melnik, D.V. Strunin and A.J. Roberts, Nonlinear analysis of rubber-based polymeric materials with thermal relaxation models, *Numerical Heat Transfer: Part A: Applications* [Taylor and Francis] Vol. 47 (2005) pp. 549–569.
27. A.J. Roberts and D.V. Strunin, Two-zone model of shear dispersion in a channel using centre manifolds, *Quarterly Journal of Mechanics and Applied Mathematics* [Oxford University Press] Vol. 57 (2004) pp. 363–378.
28. D.V. Strunin and A.J. Roberts, Dynamics of a turbulent layer generated by velocity jump, *ANZIAM Journal (E)* [Oxford University Press] Vol. 44 (2003) pp. C723–C738.
29. S.-P. Zhu and D.V. Strunin, A numerical model for the confinement of oil spill with floating booms, *Spill Science and Technology Bulletin*, Vol. 7 (2002) pp. 249–255.
30. S.-P. Zhu and D.V. Strunin, Modelling the confinement of spilled oil with floating booms, *Applied Mathematical Modelling* [Elsevier] Vol. 25 (2001) pp. 713–729.
31. D.V. Strunin, R.V.N. Melnik and A.J. Roberts, Coupled thermomechanical waves in hyperbolic thermoelasticity, *Journal of Thermal Stresses* [Taylor and Francis] Vol. 24 (2001) pp. 121–140.
32. D.V. Strunin, R.V.N. Melnik and A.J. Roberts, Numerical modelling of thermoelastic processes using nonlinear theories with thermal relaxation time, *ANZIAM Journal (E)* [Oxford University Press] Vol. 42 (2000) pp. C1356–C1378.
33. V.G. Abramov, E.N. Rumanov, D.V. Strunin and S.A. Shevchenko, Current fluctuations similar to critical opalescence, *Physics-Doklady*, Vol. 42, No. 3 (1997) pp. 111–113 [English transl. from *Doklady Akademii Nauk*, Vol. 353, No. 2 (1997) pp. 177–179, in Russ.].
34. D.V. Strunin and T.P. Ivleva, On self-organization of the SHS front, *International Journal of Self-propagating High-temperature Synthesis* [Allerton Press] Vol. 6, No. 1 (1997) pp. 55–62.

35. D.V. Strunin, A.G. Strunina, E.N. Rumanov and A.G. Merzhanov, Chaotic reaction waves with fast diffusion of activator, *Physics Letters A* [Elsevier] Vol. 192 (1994) pp. 361–363.

Articles in conference proceedings:

36. D.V. Strunin, A model of turbulent dispersion through roughness layer using centre manifolds, *Proc. of the 6th AIAA Theoretical Fluid Mechanics Conference* (June 27-30, 2011; Technical program chair: Kevin W. Cassel, American Institute of Aeronautics and Astronautics, Honolulu, USA) published online, paper AIAA 2011-3114, 4 pages.
37. Y.A. Stepanyants and D.V. Strunin, Dynamics of two charged particles in viscous fluid at small Reynolds numbers, *Proc. of the International Conference on Mathematics and Computational Methods Applied to Nuclear Science and Engineering M&C-2011* (May 8-12, 2011; Latin American Section (LAS)/American Nuclear Society (ANS), Rio de Janeiro, Brazil; ISBN 978-85-63688-00-2) CD-ROM, 10 pages.
38. D.V. Strunin, An averaged model of dispersion of pollutant in a channel: logarithmic flow, *Proc. of the 29th IASTED International Conference Modelling, Identification and Control MIC-2010* (February 15-17, 2010; Ed. K. Hangos, ACTA Press, Innsbruck, Austria; ISBN CD:978-0-88986-819-9) pp. 97–101.
39. B. Essien, M. Kotiw, H. Butler and D. Strunin, Effect of canine hyperimmune plasma on TNF and inflammatory cell levels in a lipopolysaccharide-mediated rat air pouch model of inflammation, *Proc. of the conference Sepsis-2009* (November 11-14, 2009; Amsterdam, The Netherlands) Abstract: *Critical Care* 2009, Vol. 13 (Suppl. 4) Poster 8; doi:10.1186/cc8064.
40. D.V. Strunin, A new case of truncated phase equation for coupled oscillators, *Proc. of the 5th Aisian Mathematical Conference AMC-2009, Vol. II* (June 22-26, 2009; Eds. Yahya Abu Hasan et al., Kuala Lumpur, Malaysia; ISBN 978-967-5417-54-2) pp. 588–593.
41. D.V. Strunin and A.J. Roberts, Low-dimensional boundary-layer model of turbulent dispersion in a channel, *Lecture Notes in Engineering and Computer Science / Proc. of the World Congress on Engineering 2009*,

Vol. II, International Conference of Applied and Engineering Mathematics ICAEM-2009 (July 1-3; Eds. S.I. Ao, Len Gelman, David W.L. Hukins, Andrew Hunter and A.M. Korsunsky, Newswood Limited, International Association of Engineers, Imperial College London, UK; ISBN 978-988-18210-1-0) pp. 1230–1234.

42. B. Essien, M. Kotiw, H. Butler, D. Strunin and A. Roberts, A mathematical model to account for quantitative iterative effect of TNF-alpha positive feedback mechanism on inflammatory cascade in TLR-4 mediated TNF-alpha signalling pathway, *Proc. of the 19th International Conference on Genome Informatics* (December 1-3, 2008; AusBiotech (Australia's Biotechnology Organisation), Gold Coast, Australia) CD-ROM, 2 pages.
43. D.V. Strunin, Universal regimes of a free turbulent jet, *Proc. of the 16th Australasian Fluid Mechanics Conference* (December 3-7, 2007; Eds. P. Jacobs, T. McIntyre, M. Cleary, D. Buttsworth, D. Mee, R. Clements, R. Morgan and C. Lemckert, The Univeristy of Queensland, Brisbane, Australia; ISBN 978-1-864998-94-8) CD-ROM, pp. 720–725.
44. D.V. Strunin, Phenomenological approach to 3D spinning waves, *Proc. of the International Conference on Combustion and Detonation* (August 30-September 3, 2004; Eds. A. Borisov, S. Frolov and A. Kuhl, Torus Press, Moscow, Russia) CD-ROM, article W2-15, 9 pages.
45. D.V. Strunin, Phenomenological approach to unstable detonation and solid-phase combustion: three-dimensional waves, In: *Progress in Combustion and Detonation, Zel'dovich Memorial* (2004; Eds. A. Borisov, S. Frolov and A. Kuhl, Torus Press, Moscow, Russia; ISBN 5-94588-027-2) pp. 101–102.
46. D.V. Strunin and A.J. Roberts, Self-similarity of decaying turbulent layer, *Proc. of the 5th Engineering Mathematics and Applications Conference EMAC-2002* (September 29-October 2, 2002; Eds. M. Pemberton, I. Turner and P. Jacobs, The Inst. of Engineers, Brisbane, Australia; ISSN 1447-378X) pp. 205–210.
47. A.J. Roberts and D.V. Strunin, Models encompassing hydraulic jumps in radial flows over a horizontal plate, In: *Topics in Applied and Theo-*

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48. A.J. Roberts and D.V. Strunin, Models encompassing hydraulic jumps in radial flows over a horizontal plate, *Proc. of the WSEAS International Conference on Applied and Theoretical Mathematics* (December 17-21, 2001; Eds. V.V. Kluev and N.E. Mastorakis, WSEAS, Cairns, Australia; ISBN 960-8052-52-1) CD-ROM, pp. 5981–5986.
49. A.J. Roberts and D.V. Strunin, Rigorous zonal model of contaminant dispersion in shear flows, In: *Recent Advances in Applied and Theoretical Mathematics*, Ed. N.E. Mastorakis (WSES Press, Athens, Greece, 2000; ISBN 960-8052-21-1) pp. 64–70.
50. A.J. Roberts and D.V. Strunin, Rigorous zonal model of contaminant dispersion in shear flows, *Proc. of the WSES International Conference on Applied and Theoretical Mathematics* (December 1-3, 2000; Ed. N.E. Mastorakis, WSES, Vravrona, Athens, Greece; ISBN 960-8052-20-3) CD-ROM, pp. 2011–2017.
51. R.V.N. Melnik, D.V. Strunin and A.J. Roberts, Numerical analysis of the behaviour of rubber-like polymers with hyperbolic models of non-linear thermoelasticity, *Proc. of the 16th IMACS World Congress on Scientific Computation, Applied Mathematics and Simulation* (August 21-25, 2000; Eds. M. Deville and R. Owens, 141-1, Lausanne, Switzerland; ISBN 3-9522075-1-9) pp. 1–6.
52. D.V. Strunin and S.-P. Zhu, A simple model for the flow near floating booms, *Proc. of the 13th ASCE Engineering Mechanics Conference* (June 13-16, 1999; Eds. N.P. Jones and R.G. Ghanem, ASCE, The Johns Hopkins University, Baltimore, USA) CD-ROM, 6 pages.
53. D.V. Strunin and S.-P. Zhu, An experimental study of the confinement of spilled oil by floating booms, *Proc. of the 3rd International Conference on Hydrodynamics ICHD-98* (October 12-15, 1998; Eds. H. Kim, S.H. Lee and S.J. Lee, UIAM Publishers, Seoul, South Korea; ISBN 89-7472-212-7) pp. 839–844.
54. D.V. Strunin and S.-P. Zhu, A numerical model for the flow near floating booms used to collect spilled oil, *Proc. of the International Conference on Hydraulics in Civil Engineering, HydraStorm-98* (September

- 27-30, 1998; Eds. D.J. Walker and T.M. Daniell, The Institute of Engineers, Adelaide, Australia; ISBN 1858-25-712-2) pp. 141–145.
55. D.V. Strunin, T.P. Ivleva and K.G. Shkadinsky, The evolution of a distributed combustion front at strong thermal instability, *Proc. of the Zel'dovich Memorial, International Conference on Combustion* (American Combustion Institute, Moscow, Russia, 1994) pp. 314–316.
56. D.V. Strunin, On the theory of oscillating waves of gasless combustion, *Proc. of the Russian Japanese Seminar on Combustion* (American Combustion Institute, Chernogolovka, Moscow Region, Russia, 1993) pp. 172–173.
57. D.V. Strunin, On pulsatory regime of solid flame propagation [in Russ.], *Proc. of the International School-Seminar on Rheophysics and Thermophysics of Nonequilibrium Systems. Part 2* (Belorussian Acad. Sci., Minsk, 1991) pp. 38–39.