

Kozelkov A.S., Lashkin S.V., Tsibereva Yu.A., Volkov K.N., Tarasova N.V. An implicit algorithm of solving Navier-Stokes equations to simulate flows in anisotropic porous media. *Computers and Fluids*. 2018. Vol. 160. P. 164-174.

Bulat M.P., Bulat P.V., Denissenko P.V., Esakov I.I., Grachev L.P., Volkov K.N., Volobuev I.A. Ignition of lean and stoichiometric air-propane mixture with a subcritical microwave streamer discharge. *Acta Astronautica*. 2018.

Bulat P.V., Minin O.P., Volkov K.N. Numerical simulation of optical breakdown in a liquid droplet induced by a laser pulse. *Acta Astronautica*. 2018.

Emelyanov V.N., Teterina I.V., Volkov K.N., Yakovchuk M.S. Aero-optical effects in free and wall-bounded turbulent compressible flows. *Acta Astronautica*. 2018.

Emelyanov V.N., Karpenko A.G., Volkov K.N. Numerical simulation of air hypersonic flows with equilibrium chemical reactions. *AIP Conference Proceedings*. 2018. Vol. 1959. 050010 (6 pages).

Bulat P.V., Volkov K.N. Simulation of incompressible flows in channels containing fluid and porous regions. *International Journal of Industrial and Systems Engineering*. 2018.

Volkov K.N., Denisikhin S.V., Emelyanov V.N., Teterina I.V. Numerical simulation of gas-dynamics processes in thrust vectorable nozzle. *Physical-Chemical Kinetics in Gas Dynamics*. 2018. Vol. 19. No. 2. 23 p.

Volkov K.N., Emelyanov V.N., Yakovchuk M.S. Unsteady flow in dual-bell nozzle with movement of extendible section from initial to working position. *Physical-Chemical Kinetics in Gas Dynamics*. 2018. Vol. 19. No. 1. 22 p.

Volkov K.N., Emelyanov V.N., Kapranov I.E., Teterina I.V. Lagrangian coherent vortex structures and their numerical visualization. *Numerical Method and Programming*. 2018. Vol. 19. No. 1. P. 293-313.

Volkov K.N., Emelyanov V.N., Yakovchuk M.S. Multiparameter optimization of operating control by the thrust vector based on the jet injection into the supersonic part of a nozzle. *Numerical Methods and Programming*. 2018. Vol. 18. No. 1. P. 158-172.

Volkov K.N., Emelyanov V.N. Concentration distribution of solid particles in the completely developed turbulent flow in a channel. *Journal of Engineering Physics and Thermophysics*. 2018. Vol. 91. No. 1. P. 185-194.

Bulat P., Volkov K. Laser ignition for pulse detonation engine. *Shock Wave Interactions / K. Kontis*. Springer International Publishing, 2018. P. 313-327. ISBN 978-3-319-73179-7

Bulat P.V., Mitchell S.T., Volkov K.N. Aerodynamic characteristics of an aerofoil in a wide range of angles of attack. *Journal of Engineering and Applied Sciences*. 2018. Vol. 13. No. 8. P. 6451-6461.

Emelyanov V.N., Teterina I.V., Volkov K.N. Visualization of vortical flows in the applied problems of hydrophysics. *Proceedings of the 14th Russian Conference on Advanced Technologies of Hydroacoustics and Hydrophysics, 23-25 May 2018, Saint Petersburg, Russia*. Saint Petersburg: LEMA, 2018. P. 183-186.

Emelyanov V.N., Kapranov I.E., Teterina I.V., Volkov K.N. Lagrangian coherent vortical structures and their role in transport of passive and inert particles. *Proceedings of the 14th Russian Conference on Advanced Technologies of Hydroacoustics and Hydrophysics, 23-25 May 2018, Saint Petersburg, Russia*. Saint Petersburg: LEMA, 2018. P. 187-190.

## 2017

---

Emelyanov V.N., Karpenko A.G., Kozelkov A.S., Teterina I.V., Volkov K.N., Yalozo A.V. Analysis of impact of general-purpose graphics processor units in supersonic flow modelling. *Acta Astronautica*. 2017. Vol. 135. P. 198-207.

Emelyanov V.N., Teterina I.V., Volkov K.N., Garkushev A.U. Pressure oscillations and instability of working processes in the combustion chambers of solid rocket motors. *Acta Astronautica*. 2017. Vol. 135. P. 161-171.

Bulat P.V., Ilina T.E., Volkov K.N., Silnikov M.V., Chernyshov M.V. Interaction of a shock wave with a cloud of particles and effect of particles on the shock wave weakening. *Acta Astronautica*. 2017. Vol. 135. P. 131-138.

Emelyanov V., Karpenko A., Volkov K. Development and acceleration of unstructured mesh based CFD solver. *Progress in Flight Physics*. 2017. Vol. 9. P. 387-408.

Volkov K.N., Kozelkov A.S., Lashkin S.V., Yalozo A.V. A parallel implementation of the algebraic multigrid method for solving problems in dynamics of viscous incompressible fluid. *Computational Mathematics and Mathematical Physics*. 2017. Vol. 57. No. 12. P. 2030-2046.

Volkov K.N., Emelyanov V.N., Teterina I.V., Yakovchuk M.S. Visualization of vertical flows in computational fluid dynamics. *Computational Mathematics and Mathematical Physics*. 2017. Vol. 57. No. 8. P. 1360-1375.

Volkov K.N., Emelyanov V.N., Yakovchuk M.S. Simulation of the transverse injection of a pulsed jet from the surface of a flat plate into a supersonic. *Journal of Applied Mechanics and Technical Physics*. 2017. Vol. 58. No. 6. C. 1053-1062.

Volkov K.N., Emelyanov V.N., Karpenko A.G. Numerical simulation of gas dynamic and physical-chemical processes in hypersonic flows past bodies. Numerical Methods and Programming. 2017. Vol. 18. P. 387-405.

Brykov N.A., Volkov K.N., Emelyanov V.N., Teterina I.V. Flows of ideal and real gases in the channels with variable cross section with unsteady localized energy supply. Numerical Methods and Programming. 2017. Vol. 18. No. 1. P. 20-40.

Volkov K.N., Emelyanov V.N., Yakovchuk M.S. Transverse injection of a jet from the surface of a flat plate into the supersonic flow over it. Journal of Engineering Physics and Thermophysics. 2017. Vol. 90. No. 6. P. 1439-1444.

Volkov K.N., Denisikhin S.V., Emelyanov V.N., Teterina I.V. Flow of combustion products containing condensed-phase particles over a recessed vectorable jet nozzle. Journal of Engineering Physics and Thermophysics. 2017. Vol. 90. No. 5. P. 1140-1146.

Volkov K.N., Denisikhin S.V., Emelyanov V.N. Gas dynamics of a recessed nozzle in its displacement in the radial direction. Journal of Engineering Physics and Thermophysics. 2017. Vol. 90. No. 4. P. 932-940.

Bulat P.V., Volkov, K.N. Solution of two-dimensional Riemann problems using the method of piecewise parabolic reconstruction. Journal of Engineering Physics and Thermophysics. 2017. Vol. 90. No. 3. P. 525-534.

Bulat P.V., Volkov K.N. Model gas-dynamical problems possessing cylindrical and spherical symmetry and their solution with the aid of WENO schemes. Journal of Engineering Physics and Thermophysics. 2017. Vol. 89. No. 2. P. 412-422.

Bulat P.V., Volobuev I.A., Volkov K.N., Pronin V.A. Numerical simulation of regular and Mach reflection of shock wave from the wall. Scientific and Technical Journal of Information Technologies, Mechanics and Optics. 2017. Vol. 17. No. 5. P. 920-928.

Volkov K.N., Bulat P.V., Volobuev I.A., Pronin V.A. Теплообмен в осесимметричной кавернес вращающимся диском в турбулентном режиме. Scientific and Technical Journal of Information Technologies, Mechanics and Optics. 2017. Vol. 17. No. 3. P. 514-524.

Muppala S., Nakahara M., Madhav Rao V.C., Dembele S., Volkov K. Experimental investigations and algebraic combustion model predictions of lean hydrogen and hydrogen-enriched hydrocarbon/air flames. Proceedings of the 8th European Combustion Meeting, 18-21 April 2017, Dubrovnik, Croatia. 2017. No. 0595.

Volkov K.N. Detonation in particulate systems with solid particles and liquid droplets. FABIG Newsletter. 2017. No. 70.

Emelyanov V., Volkov K., Yakovchuk M. Transverse jet injection into a supersonic nozzle flow. 30th International Symposium on Shock Waves (ISSW30). G. Ben-Dor, O.

Igra, O. Sadot. Springer International Publishing, 2017. Vol. 1. P. 77-81. ISBN 978-3-319-46211-0

Bulat P., Volkov K. Simulation of laser-induced detonation in particulate systems with applications to pulse detonation engines. 30th International Symposium on Shock Waves (ISSW30). G. Ben-Dor, O. Igra, O. Sadot. Springer International Publishing, 2017. Vol. 1. P. 405-409. ISBN 978-3-319-46211-0

Volkov K.N., Emelyanov V.N., Teterina I.V. Speed-up of gas dynamics calculation on unstructured meshes. Proceedings of the XVI International Conference on Super-calculations and Mathematical Modelling / R.M. Shagaliev. Sarov, Russian Federal Nuclear Center, 2017. P. 66-73.

Volkov K.N., Emelyanov V.N., Yakovchuk M.S. Interaction of high-temperature jets with cooling target. Proceedings of the XVI International Conference on Super-calculations and Mathematical Modelling / R.M. Shagaliev. Sarov, Russian Federal Nuclear Center, 2017. P. 74-81.

Brykov N.A., Volkov K.N., Emelyanov V.N., Teterina I.V., Yakovchuk M.S. Nozzle flows with localized unsteady energy supply. Proceedings of IX Russian Conference on Intra-Chamber Processes and Combustion Processes in Solid Propulsion Systems and Guns (ICOC-2017), 10-12 October 2017, Moscow, Russia. Izhevsk, 2018. P. 295-309.

Volkov K.N., Emelyanov V.N., Teterina I.V., Yakovchuk M.S. Simulation of flow in telescope nozzle block with movement of its expandable section. Proceedings of IX Russian Conference on Intra-Chamber Processes and Combustion Processes in Solid Propulsion Systems and Guns (ICOC-2017), 10-12 October 2017, Moscow, Russia. Izhevsk, 2017. P. 310-320.

## 2016

---

Macchi M., Wen J.X., Volkov K., Heidari A., Chung Y.M. Modelling liquid fuel cascades with OpenFOAM. Process Safety Progress. 2016. Vol. 35. No. 2. P. 179-184.  
DOI: 10.1002/prs.11777

Kozelkov A., Kurulin V., Emelyanov V., Tyatyushkina E., Volkov K. Comparison of convective flux discretization schemes in detached-eddy simulation of turbulent flows on unstructured meshes. Journal of Scientific Computing. 2016. Vol. 67. No. 1. P. 176-191.

Volkov K.N., Emelyanov V.N., Teterina I.V. Geometrical and algebraic multigrid techniques for fluid dynamics problems on unstructured grids. Computational Mathematics and Mathematical Physics. 2016. Vol. 56. No. 2. P. 286-302.

Bulat P.V., Volkov K.N., Yakovchuk M.S. Flow visualization with strong and weak gas dynamic discontinuities in computational fluid dynamics. Numerical Methods and Programming. 2016. Vol. 17. No. 1. P. 245-257.

Volkov K.N., Emelyanov V.N., Teterina I.V., Yakovchuk M.S. Methods and concepts of vortex flow visualization in the problems of computational fluid dynamics. Numerical Methods and Programming. 2016. Vol. 17. No. 1. P. 81-100.

Volkov K.N., Denisihin S.V., Emelyanov V.N. Formation of vortex structures in the prenozzle space of an engine with a vectorable thrust nozzle. Journal of Engineering Physics and Thermophysics. 2016. Vol. 89. No. 3. P. 660-670.

Volkov K.N., Bulat P.V., Ilina E.E. Model of interaction of laser radiation with a liquid droplet. Scientific and Technical Journal of Information Technologies, Mechanics and Optics. 2016. No. 5. P. 764-773.

Bulat P.V., Volkov K.N. Numerical simulation of shock wave refraction on inclined contact discontinuity. Scientific and Technical Journal of Information Technologies, Mechanics and Optics. 2016. No. 3. P. 550-558.

Bulat P.V., Volkov K.N. Numerical simulation of shock wave diffraction on over right angle on unstructured meshes. Scientific and Technical Journal of Information Technologies, Mechanics and Optics. 2016. Vol. 16. No. 2. P.354-362.

Bulat P.V., Volkov K.N. WENO schemes for solution of unsteady one-dimensional gas dynamics test problems. Scientific and Technical Journal of Information Technologies, Mechanics and Optics. 2016. No. 1. P. 174-180.

Bulat P.V., Denissenko P.V., Volkov K.N. Trends in the development of detonation engines for high-speed aerospace aircrafts and the problem of triple configurations of shock waves. Part 1. Investigations of detonation engines. Scientific and Technical Journal of Information Technologies, Mechanics and Optics. 2016. No. 1. P. 1-21.

Bulat P.V., Volkov K.N. Monotonic derivative correction for calculation of supersonic flows. International Journal of Environmental and Science Education. 2016. Vol. 11. No. 17. P. 10365-10374.

Bulat P.V., Volkov K.N. Numerical simulations of shock wave refraction at inclined gas contact discontinuity. International Journal of Environmental and Science Education. 2016. Vol. 11. No. 16. P. 9026-9038.

Bulat P.V., Volkov K.N. Shock waves oscillations in the interaction of supersonic flows with the head of the aircraft. International Journal of Environmental and Science Education. 2016. Vol. 11. No. 12. P. 4976-4984.

Bulat P.V., Volkov K.N., Ilyina E.Y. Model of interaction of laser radiation with a drop of liquid. IEJME-Mathematics Education. 2016. Vol. 11. No. 8. P. 3009-3020.

Bulat P.V., Volkov K.N., Ilina T.E. Interaction of a shock wave with a cloud of particles. IEJME-Mathematics Education. 2016. 2016. Vol. 11. No. 8. P. 2949-2962.

Bulat P.V., Volkov K.N. Detonation jet engine. Part 1. Thermodynamic cycle. International Journal of Environmental and Science Education. 2016. Vol. 11. No. 12. P. 5009-5019.

Bulat P.V., Volkov K.N. Shock waves oscillations in the interaction of supersonic flows with the head of the aircraft. International Journal of Environmental and Science Education. 2016. Vol. 11. No. 12. P. 4976-4984.

Bulat P.V., Volkov K.N. Detonation jet engine. Part 2. Construction features. International Journal of Environmental and Science Education. 2016. Vol. 11. No. 12. P. 5020-5033.

Bulat P.V., Volkov K.N. The history of the study of detonation. International Journal of Environmental and Science Education. 2016. Vol. 11. No. 11. P. 4894-4909.

Bulat P., Volkov K. Multi-scale simulation of two-phase flows in energy systems. Proceedings of the 12th International Conference on Heat Transfer, Fluid Mechanics and Thermodynamics (HEFAT2016), 11-13 July 2016, Malaga, Costa Del Sol, Spain. Paper No. 1570235169.

Bulat P., Esakov I., Denissenko P., Volkov K. Microwave and laser ignition for pulse detonation engines. Proceedings of the 22nd International Shock Interaction Symposium (ISIS22), 4-8 July 2016, Glasgow, UK / K. Kontis, H. Zare-Behtash, K. Ramesh, A. Busse, C. White. United Kingdom, 2016. ISBN: 9780852619537

Irina E.E., Volkov K.N., Bulat P.V. Model of interaction of laser radiation with droplet. Perspective development directions of modern science. Scientific articles collection of the 15th International Scientific Conference of Eurasian Scientific Association, March 2016, Moscow, Russia. 2016. N 3(15). P. 10-13.

## 2015

---

Soto Hernández O., Volkov K., Martín Mederos A.C., Medina Padrón J.F., Feijóo Lorenzo A.E. Power output of a wind turbine installed in an already existing viaduct. Renewable and Sustainable Energy Reviews. 2015. Vol. 48. P. 287-299.

Emelyanov V.N., Karpenko A.G., Volkov K.N. Development of advanced computational fluid dynamics tools and their application to simulation of internal turbulent flows. Progress in Flight Physics. 2015. Vol. 7. P. 247-268.

Volkov K.N., Emelyanov V.N., Karpenko A.G. Preconditioning of Navier-Stokes equations in the computation of free convective flows. Computational Mathematics and Mathematical Physics. 2015. Vol. 55. No. 12. P. 2080-2093.

Volkov K.N., Emelyanov V.N., Yakovchuk M.S. Numerical simulation of the interaction of a transverse jet with a supersonic flow using different turbulence models. Journal of Applied Mechanics and Technical Physics. 2015. Vol. 56. No. 5. P. 789-798.

Volkov K.N., Karpenko A.G. Preconditioning of gas dynamics equations in compressible gas flow computations at low Mach numbers. *Computational Mathematics and Mathematical Physics*. 2015. Vol. 55. No. 6. P. 1051-1067.

Volkov K. Laser-induced breakdown and detonation in particle-laden systems. *American Journal of Applied Sciences*. 2015. Vol. 12. No. 1. P. 31-39.

Volkov K.N., Emelyanov V.N., Pustovalov A.V. Supersonic flows in channels and jets when applied to the problems of designing aerodynamic windows of gas lasers. *Journal of Engineering Physics and Thermophysics*. 2015. Vol. 88. No. 5. P. 1210-1220.

Bulat P.V., Volkov K.N. Use of WENO schemes for simulation of the reflected shock wave–boundary layer interaction. *Journal of Engineering Physics and Thermophysics*. 2015. Vol. 88. No. 5. P. 1203-1209.

Bulat P.V., Volkov K.N. Simulation of supersonic flow in a channel with a step on unstructured meshes with the use of the WENO scheme. *Journal of Engineering Physics and Thermophysics*. 2015. Vol. 88. No. 4. P. 877-884.

Bulat P.V., Volkov K.N., Silnikov M.V., Chernyshev M.V. Theory of breakdown of an arbitrary gas-dynamic discontinuity—the methods of the Riemann problem solution. *Research Journal of Applied Sciences, Engineering and Technology*. 2015. Vol. 11. No. 1. P. 1-9.

Bulat P.V., Volkov K.N. Arbitrary interaction of plane supersonic flows. *Scientific and Technical Journal of Information Technologies, Mechanics and Optics*. 2015. No. 6. P. 1155-1168.

Bulat P.V., Volkov K.N. One-dimensional gas dynamics problems and their solution based on high-resolution finite difference schemes. *Scientific and Technical Journal of Information Technologies, Mechanics and Optics*. 2015. No. 4. P. 731-740.

Bulat P.V., Volkov K.N. Monotonic derivative correction of for calculation of supersonic flows with shock waves. *Scientific and Technical Journal of Information Technologies, Mechanics and Optics*. 2015. No. 4. P. 741-747.

Bulat P.V., Volkov K.N., Silnikov M.V., Chernyshev M.V. Analysis of finite-difference schemes based on exact and approximate solution of Riemann problem. *Scientific and Technical Journal of Information Technologies, Mechanics and Optics*. 2015. No. 1(95). P. 139-148.

Emelyanov V., Volkov K., Yakovchuk M. Transverse jet injection into a supersonic nozzle flow. *Proceedings of the 30th International Symposium on Shock Waves (ISSW30)*, 19-24 July 2015, Tel-Aviv, Israel. 2015. 6 p.

Bulat P., Volkov K. Simulation of laser-induced detonation in particulate systems with applications to pulse detonation engines. *Proceedings of the 30th International Symposium on Shock Waves (ISSW30)*, 19-24 July 2015, Tel-Aviv, Israel. 2015. 6 p.



Emelyanov V., Karpenko A., Volkov K. Development and acceleration of unstructured mesh-based CFD solver. Proceedings of the 6th European Conference for Aeronautics and Space Sciences (EUCASS 2015), 29 June - 3 July 2015, Krakow, Poland. 15 p.

Macchi M., Wen J.X., Volkov K., Heidari A., Chung Y. Modelling liquid fuel cascades with OpenFOAM. Proceedings of the 11th Global Congress on Process Safety (GCPS) and American Institute of Chemical Engineers (AIChE) Spring Meeting, 26-29 April 2015, Austin, USA. 12 p.

Emelyanov V.N., Volkov K. Multi-scale simulation of turbulent two-phase flows induced by injection of fluid and particles. Proceedings of the 7th European Combustion Meeting, 31 March – 1 April 2015, Budapest, Hungary. 2015. No. 4249.

Bulat P., Volkov K. Simulation of detonation in particulate systems with applications to pulse detonation engines. Proceedings of the 7th European Combustion Meeting, 31 March – 1 April 2015, Budapest, Hungary. 2015. No. 4252.

## 2014

---

Volkov K.N., Derugin Yu.N., Emelyanov V.N., Karpenko A.G., Kozelkov A.S., Teterina I.V., Yalozo A.V. Solution of problems of gas dynamics on graphics processor units. Problems of nuclear science and engineering. Mathematical simulation of physical processes. 2014. No. 4. P. 22-34.

Chan K., Ordys A., Duran O., Volkov K. Minimising engine emissions using state-feedback control with LQR and artificial intelligence fuel estimator. International Journal of Innovative Research in Technology and Science. 2014. Vol. 2. No. 3. 8 p.

Emelyanov V.N., Volkov K.N. Numerical simulation of laser-induced detonation in mixture of hydrogen with suspended metal particles. International Journal of Hydrogen Energy. 2014. Vol. 39. No. 11. P. 6222-6232.

Volkov K.N. Formulation of wall boundary conditions in turbulent flow computations on unstructured meshes. Computational Mathematics and Mathematical Physics. 2014. Vol. 54. No. 2. P. 353-367.

Volkov K.N., Emelyanov V.N., Pustovalov A.V. Supersonic flows of an inviscid compressible gas in aerodynamic windows of gas lasers. Numerical Methods and Programming. 2014. Vol. 15. No. 1. P. 712-725.

Volkov K.N., Derugin Yu.N., Emelyanov V.N., Kozelkov A.S., Teterina I.V. An algebraic multigrid method in problems of computational physics. Numerical Methods and Programming. 2014. Vol. 15. No. 1. P. 183-200.

Volkov K.N., Karpenko A.G. Computational modeling of free convection between coaxial cylinders on the basis of a preconditioned form of Navier-Stokes equations. Journal of Engineering Physics and Thermophysics. 2014. Vol. 87. No. 4. P. 929-935.



Volkov K.N. Application and implementation of high-resolution difference schemes for solution of gas dynamics problems on unstructured meshes. *Scientific and Technical Journal of Information Technologies, Mechanics and Optics*. 2014. No. 6(94). P. 153-162.

Volkov K.N. Multi-grid method of convergence speeding-up for the solution of gas dynamics problems on unstructured meshes. *Scientific and Technical Journal of Information Technologies, Mechanics and Optics*. 2014. No. 4(92). P. 156-163.

Volkov K.N. Visualization of vortical flows in computational fluid dynamics and their applications. *Scientific and Technical Journal of Information Technologies, Mechanics and Optics*. 2014. No. 3(91). P. 1-11.

Volkov K.N., Emelyanov V.N., Teterina I.V. Unsteady turbulent two-phase flows in the combustion chambers of SRMs. *Proceedings of the VIII International Conference on Internal Ballistics and Combustion Processes in Solid Propulsion Systems and Guns (ICOC-2014)*, 24-26 September 2014, Moscow, Russia. Izhevsk, Ural Branch of Russian Academy of Sciences, 2014. P. 62-74.

Udechukwu I.D., Heidari A., Volkov K.N., Wen J.X., Dembele S. Investigation of liquefied natural gas (LNG) dispersion using computational fluid dynamics. *Proceedings of the 11th World Congress on Computational Mechanics (WCCM XI)*, 5th European Conference on Computational Mechanics (ECCM V), 6th European Conference on Computational Fluid Dynamics (ECFD VI), 20-25 July 2014, Barcelona, Spain. 2014. Vol. 6. P. 7372-7382.

Chan K., Ordys A., Duran O., Volkov K., Deng J. Adaptive neuro-fuzzy method to estimate virtual SI engine fuel composition using residual gas parameters. *Proceedings of the UKACC International Conference on Control (CONTROL 2014)*, 8-11 July 2014, Loughborough University, UK. IEEE. P. 174-179.

Udechukwu I.D., Dembele S., Heidari A., Volkov K.N., Wen J.X. Computational fluid dynamics simulation of LNG dispersion using OpenFOAM. *Proceedings of the 22nd Annual Conference of the CFD Society of Canada*, 1-4 June 2014, University of Toronto, Toronto, Canada. P. 1-7.