

Riabov's Selected Publications on Hypersonics

1. Riabov, V. V. (2012). "Numerical Simulations of Nonequilibrium and Diffusive Effects in Spherical Shock Waves." In: Shock Waves, edited by K. Kontis, (Proceedings of the 28th International Symposium on Shock Waves, Manchester, UK, July 17-22, 2011), Heidelberg: Springer, 2012, Paper No. [2514](#).
2. Riabov, V. V. (2012). "Numerical Studies of Hypersonic Binary Gas-Mixture Flows near a Sphere." In: Shock Waves, edited by K. Kontis, (Proceedings of the 28th International Symposium on Shock Waves, Manchester, UK, July 17-22, 2011), Heidelberg: Springer, 2012, Paper No. [2517](#).
3. Riabov, V. V. (2011). "Rarefaction Effects in Hypersonic Aerodynamics." In: Rarefied Gas Dynamics, Proceedings of the 27th International Symposium on Rarefied Gas Dynamics, Pacific Grove, CA, USA, July 10-15, 2010, edited by D. A. Levin, I. J. Wysong, and A. L. Garcia. AIP Conference Proceedings, Vol. 1333, Part II, American Institute of Physics, Melville, NY, 2011, pp. [1331-1336](#).
4. Riabov, V. V. (2011). "Estimations of Rotational-Relaxation Parameters in Diatomic Gases." In: Rarefied Gas Dynamics, Proceedings of the 27th International Symposium on Rarefied Gas Dynamics, Pacific Grove, CA, USA, July 10-15, 2010, edited by D. A. Levin, I. J. Wysong, and A. L. Garcia. AIP Conference Proceedings, Vol. 1333, Part II, American Institute of Physics, Melville, NY, 2011, pp. [1257-1262](#).
5. Riabov, V. V. (2010). "Hypersonic Aerodynamics of Toroidal Ballutes." Proceedings of the 27th International Congress of the Aeronautical Sciences (19-24 September 2010, Nice, France), [Paper No. 18](#).
6. V.V. Riabov, "Numerical Studies of Heat Transfer on Hypersonic Blunt Bodies with Gas Injection", in B.H.V. Topping, J.M. Adam, F.J. Pallarés, R. Bru, M.L. Romero, (Editors), "Proceedings of the Seventh International Conference on Engineering Computational Technology", Civil-Comp Press, Stirlingshire, UK, Paper 130, 2010. doi:10.4203/ccp.94.130, Paper No. [130](#). URL: <http://www.ctresources.info/ccp/paper.html?id=6202>
7. Riabov, V. V. (2009). "Numerical Study of Interference between Simple-Shape Bodies in Hypersonic Flows," Computers and Structures, Vol. 87 (2009), pp. [651-663](#), doi: 10.1016.
8. Riabov, V. V. (2009). "Numerical Simulation of Interactions between Dissociating Gases and Catalytic Materials in Shock Tubes." In: Shock Waves, edited by K. Hannemann and F. Seiler, (Proceedings of the 26th International Symposium on Shock Waves, Göttingen, Germany, July 15-20, 2007), Vol. 2, Springer-Verlag, Berlin, Germany, 2009, pp. [1437-1442](#).
9. Riabov, V. V. (2009). "Rotational-Translational Relaxation Effects in Diatomic-Gas Flows." In: Shock Waves, edited by K. Hannemann and F. Seiler, (Proceedings of the 26th International Symposium on Shock Waves, Göttingen, Germany, July 15-20, 2007), Vol. 2, Springer-Verlag, Berlin, Germany, 2009, pp. [1155-1160](#).
10. Riabov, V. V., and Botin, A. B. (2008). "Numerical and Experimental Studies of Shock Interference in Hypersonic Flows near a Cylinder." Proceedings of the 26th International Congress of the Aeronautical Sciences (14-19 September 2008, Anchorage, Alaska, USA), [Paper No. 071](#).
11. Riabov, V. V. (2008). "Heat Transfer on Hypersonic Blunt Bodies with Gas Injection." Proceedings of the 26th International Congress of the Aeronautical Sciences (14-19 September 2008, Anchorage, Alaska, USA), [Paper No. 161](#).
12. Riabov, V. V. (2007). "Numerical Simulation of Shock Interference in Hypersonic Rarefied Flows about a Cylinder," Compilation of Abstracts for the Fourth MIT Conference on Computational Fluid & Solid Mechanics – Focus: Fluid-Structure Interactions (Cambridge, MA, June 13-15, 2007), edited by K. J. Bathe, Massachusetts Institute of Technology, Cambridge, MA, 2007, p. 32.
13. Riabov, V. V. (2007). "Exploring Singular Differential Equations with Exponential Box-Scheme," Proceedings of the 19th Annual International Conference on Technology in Collegiate Mathematics (Boston, MA, February 15-18, 2007), Boston, MA, Prentice-Hall, 2007, pp. [173-177](#).
14. Riabov, V. V. (2007). "Numerical Study of Hypersonic Rarefied-Gas Flows About a Toroidal Ballute." In: Rarefied Gas Dynamics. Proceedings of the 25th Symposium on Rarefied Gas

- Dynamics, St.-Petersburg, Russia, July 21-28, 2006, edited by M. S. Ivanov and A. K. Rebrov, Novosibirsk, Siberian Branch of the Russian Academy of Sciences, 2007, [pp. 765-770](#).
15. Riabov, V. V. (2007). "Numerical Simulation of Rarefied-Gas Flows about a Rotating Cylinder." In: Rarefied Gas Dynamics. Proceedings of the 25th Symposium on Rarefied Gas Dynamics, St.-Petersburg, Russia, July 21-28, 2006, edited by M. S. Ivanov and A. K. Rebrov, Novosibirsk, Siberian Branch of the Russian Academy of Sciences, 2007, [pp. 777-783](#).
 16. Riabov, V. V. (2006). "Numerical Simulation of Kinetic Effects in Low-Density Hypersonic Aerodynamics," Proceedings of the 25th ICAS Congress, [Paper 104](#), Hamburg, Germany, 3-8 September, 2006, pp. 1-10.
 17. Riabov, V. V. (2005). "Three Fast Computational Approximation Methods in Hypersonic Aerothermodynamics." In: Computational Fluid and Solid Mechanics 2005, Proceedings of the Third MIT Conference on Computational Fluid and Solid Mechanics, June 14-17, 2005, edited by K. J. Bathe, Vol. 1, Elsevier, Boston, MA, 2005, [pp. 819-823](#).
 18. Riabov, V. V. (2004). "Nonequilibrium and Rarefaction Effects in the Hypersonic Multicomponent Viscous Shock Layers," Proceedings of the 24th ICAS Congress, [Paper 34](#), Yokohama, Japan, August-September 2004, pp. 1-10.
 19. Riabov, V. V. (2004). "Applications of Underexpanded Jets in Hypersonic Aerothermodynamic Research," Proceedings of the 24th ICAS Congress, [Paper 263](#), Yokohama, Japan, August-September 2004, pp. 1-10.
 20. Riabov, V. V. (2004). "Heat Transfer on a Hypersonic Sphere with Diffuse Rarefied-Gas Injection," Journal of Spacecraft and Rockets, Vol. 41, No. 4, July-Aug. 2004, pp. [698-703](#).
 21. Riabov, V. V. (2004). "Heat Transfer on a Hypersonic Sphere with Diffuse Rarefied-Gas Injection." 42nd Aerospace Sciences Meeting & Exhibit, January 5-8, 2004, Reno, NV. AIAA Paper, No. [2004-1176](#), January 2004.
 22. Riabov, V. V. (2003). "Kinetic Phenomena in Spherical Expanding Flows of Binary-Gas Mixtures," Journal of Thermophysics and Heat Transfer, Vol. 17, No. 4, Oct.-Dec. 2003, pp. [526-533](#).
 23. Riabov, V. V. (2003). "Applications of Exponential Box Schemes for Viscous Flows with Combustion and Blowing." In: Computational Fluid and Solid Mechanics 2003, Proceedings of the Second MIT Conference on Computational Fluid and Solid Mechanics, June 17-20, 2003, edited by K. J. Bathe, Vol. 1, Elsevier, Boston, MA, 2003, pp. [1102-1105](#).
 24. Riabov, V. V. (2002). "Aerodynamics of Two Interfering Simple-Shape Bodies in Hypersonic Rarefied-Gas Flows." In: Rarefied Gas Dynamics, 23rd International Symposium, AIP Conference Proceedings, Vol. 663, editors Andrew D. Ketsdever and E. P. Muntz, American Institute of Physics, Melville, NY, 2002, pp. [489-496](#).
 25. Riabov, V. V. (2002). "Kinetic Effects in Spherical Expanding Flows of Binary-Gas Mixtures." In: Rarefied Gas Dynamics, 23rd International Symposium, AIP Conference Proceedings, Vol. 663, editors Andrew D. Ketsdever and E. P. Muntz, American Institute of Physics, Melville, NY, 2002, pp. [258-265](#).
 26. Riabov, V. V. (2002). "Aerodynamics of Two Side-by-Side Plates in Hypersonic Rarefied-Gas Flows," Journal of Spacecraft and Rockets, Vol. 39, No. 6, Nov.-Dec. 2002, pp. [910-916](#).
 27. Riabov, V. V. (2002). "Simulation Techniques in Hypersonic Aerodynamics," Proceedings of the 23rd ICAS Congress, [Paper 181](#), Toronto, Canada, 2002, pp. 1-10.
 28. Riabov, V. V. (2002). "Computational and Analytical Methods in the Aircraft Design Curriculum," Proceedings of the 23rd ICAS Congress, [Paper 255p](#), Toronto, Canada, 2002, pp. 1-3.
 29. Riabov, V. V. (2002). "Aerodynamics of Two Side-by-Side Plates in Hypersonic Rarefied-Gas Flows." 32nd AIAA Fluid Dynamics Conference and Exhibit, St. Louis, MI, June 24-26, 2002, AIAA Paper, No. [2002-3298](#), June 2002.
 30. Riabov, V. V. (2002). "Interference between Two Side-By-Side Cylinders in Hypersonic Rarefied-Gas Flows." 32nd AIAA Fluid Dynamics Conference and Exhibit, St. Louis, MI, June 24-26, 2002, AIAA Paper, No. [2002-3297](#), June 2002.
 31. Riabov, V. V. (2000). "Gas Dynamic Equations, Transport Coefficients, and Effects in Nonequilibrium Diatomic Gas Flows," Journal of Thermophysics and Heat Transfer, Vol. 14, No. 3, July-Sept. 2000, pp. [404-411](#).
 32. Riabov, V. V. (2000). "Challenge in the Aerospace University Classroom." 38th Aerospace Sciences Meeting & Exhibit, January 10-13, 2000, Reno, NV. AIAA Paper, No. [2000-0802](#),

January 2000.

33. Riabov, V. V. (2000). "New Challenges for Aerospace Education Programs in American and Russian Universities." 38th Aerospace Sciences Meeting & Exhibit, January 10-13, 2000, Reno, NV. AIAA Paper, No. [2000-0528](#), January 2000.
34. Riabov, V. V. (1999). "Aerodynamics of a Spinning Cylinder in Rarefied Gas Flows," Journal of Spacecraft and Rockets, Vol. 36, No. 3, 1999, pp. [486-488](#).
35. Riabov, V. V. (1999). "Numerical Study of Hypersonic Rarefied-Gas Flows About a Torus," Journal of Spacecraft and Rockets, Vol. 36, No. 2, 1999, pp. [293-296](#).
36. Riabov, V. V., and Botin, A. V. (1999). "Shock Interference in Hypersonic Rarefied-Gas Flows Near a Cylinder." In: 17th AIAA Applied Aerodynamics Conference, Norfolk, VA, June 28-July 1, 1999, Collection of Technical Papers. AIAA Paper, No. [99-3207](#). AIAA, Reston, VA, 1999.
37. Riabov, V. V. (1998). "Comparative Analysis of Hypersonic Rarefied Gas Flows near Simple-Shape Bodies," Journal of Spacecraft and Rockets, Vol. 35, No. 4, 1998, pp. [424-433](#).
38. Yegorov, I. V., Yegorova, M. V., and Riabov, V. V. (1998). "Aerothermodynamic Characteristics of Two-Dimensional Bluff Bodies in Hypersonic Viscous Flows." Proceedings of the 21st International Congress in Aeronautical Sciences, Melbourne, Australia, 1998, pp. [R2.1 - R2.11](#).
39. Riabov, V. V., Yegorov, I. V., Ivanov, D. V., and Legner, H. H. (1998). "Numerical Study of Hypersonic Turbulent Flow About Segmented Projectiles." In: Proceedings of the AIAA 16th Applied Aerodynamics Conference (Albuquerque, NM, June 15-18, 1998), AIAA Paper, No. [98-2626](#), AIAA, Reston, VA, 1998, pp. 427-435.
40. Riabov, V. V. (1998). "Numerical Study of Hypersonic Rarefied-Gas Flow about a Torus." 36th Aerospace Sciences Meeting & Exhibit, January 12-15, 1998, Reno, NV. AIAA Paper, No. 98-0778, January 1998.
41. Yegorov, I. V., Yegorova, M. V., and Riabov, V. V. (1998). "Analysis of Hypersonic Viscous Flow About Ogival Cylinders Placed One After Another." 36th Aerospace Sciences Meeting & Exhibit, January 12-15, 1998, Reno, NV. AIAA Paper, No. [98-0171](#), January 1998.
42. Yegorov, I. V., Yegorova, M. V., Ivanov, D. V., and Riabov, V. V. (1997). "Numerical Study of Hypersonic Viscous Flow About Plates Located Behind a Cylinder." 32nd Thermophysics Conference, Atlanta, GA, June 23-25, 1997. AIAA Paper, No. [97-2573](#), June 1997.
43. Riabov, V. V. (1997). "The Magnus Effect in Rarefied-Gas Flow near a Spinning Cylinder." In: Proceedings of the AIAA 15th Applied Aerodynamics Conference (Atlanta, GA, June 23-25, 1997), AIAA Paper 97-2307, Vol. 2. AIAA, Reston, VA, 1997, pp. 708-713.
44. Riabov, V. V. (1997). "Comparative Analysis of Hypersonic Rarefied Gas Flows near Simple-Shape Bodies." In: Proceedings of the AIAA 15th Applied Aerodynamics Conference (Atlanta, GA, June 23-25, 1997), AIAA Paper 97-2226, Vol. 1. AIAA, Reston, VA, 1997, pp. 125-133.
45. Riabov, V. V. (1997). "Comparative Analysis of Aerospace Education Programs in American and Russian Universities." In: Mechanical Engineering Education for Global Practice. The Proceedings of the 1997 Mechanical Engineering Department Heads Conference, March 19-21, 1997, San Diego, CA. The American Society of Mechanical Engineers, New York, NY, 1997, pp. 39-42.
46. Riabov, V. V., and Provotorov, V. P. (1996). "Exponential Box Schemes for Boundary-Layer Flows with Blowing." Journal of Thermophysics and Heat Transfer, Vol. 10, No. 1, Jan.-March 1996, pp. [126-130](#).
47. Riabov, V. V., and Provotorov, V. P. (1996). "Exponential Box Schemes for Boundary-Layer Flows with Blowing." 34th Aerospace Sciences Meeting & Exhibit, January 15-18, 1996, Reno, NV. AIAA Paper, No. 96-0608, January 1996.
48. Riabov, V. V. (1996). "Numerical Analysis of Compression and Expansion Binary Gas-Mixture Flows." 34th Aerospace Sciences Meeting & Exhibit, January 15-18, 1996, Reno, NV. AIAA Paper, No. [96-0109](#), January 1996.
49. Riabov, V. V. (1996). "The Comparative Analysis of Approximate Numerical Solutions of the Navier-Stokes Equations," (AIAA Paper, No. [96-2446](#)), The 14th AIAA Applied Aerodynamics Conference (June 17-19, 1996/New Orleans, LA), A Collection of Technical Papers, Part 2, pp. 563-574.
50. Riabov, V. V. (1996). "Approximate Calculation of Transport Coefficients of Earth and Mars Atmospheric Dissociating Gases," Journal of Thermophysics and Heat Transfer, Vol. 10, No. 2, April-June 1996, pp. [209-216](#).

51. Riabov, V. V. (1995). "Approximate Calculation of Transport Coefficients of Earth and Mars Atmospheric Dissociating Gases." 30th AIAA Thermophysics Conference. June 19-22, 1995, San Diego, CA. [AIAA Paper](#), No. 95-2058, June 1995.
52. Riabov, V. V. (1995). "Aerodynamic Applications of Underexpanded Hypersonic Viscous Jets," [Journal of Aircraft](#), Vol. 32, No. 3, May-June 1995, pp. [471-479](#).
53. Riabov, V. V., and Provotorov, V. P. (1995). "Modeling of Heat Transfer Processes at Catalytic Materials in Shock Tube." [Journal of Thermophysics and Heat Transfer](#), Vol. 9, No. 2, April-June 1995, pp. [363-365](#).
54. Riabov, V. V., and Botin, A. V. (1995). "Hypersonic Hydrogen Combustion in the Thin Viscous Shock Layer." [Journal of Thermophysics and Heat Transfer](#), Vol. 9, No. 2, April-June 1995, pp. [233-239](#).
55. Riabov, V. V. (1994). "Aerodynamic Applications of Underexpanded Hypersonic Viscous Jets." 18th AIAA Aerospace Ground Testing Conference. June 20-23, 1994, Colorado Springs, CO. [AIAA Paper](#), No. 94-2634, June 1994.
56. Riabov, V. V. (1994). "The Method of Heat Flux Simulating in Hypersonic Aerothermodynamics." 18th AIAA Aerospace Ground Testing Conference. June 20-23, 1994, Colorado Springs, CO. [AIAA Paper](#), No. 94-[2478](#), June 1994.
57. Riabov, V. V. (1994). "Nonequilibrium Gas Dynamic Equations and Transfer Coefficients in Diatomic Gas," 25th AIAA Plasmadynamics and Lasers Conference. June 20-23, 1994, Colorado Springs, CO. [AIAA Paper](#), No. 94-[2400](#), June 1994.
58. Riabov, V. V., and Provotorov, V. P. (1994). "Modeling of Heat Transfer Processes at Catalytic Materials in Shock Tube." 6th AIAA/ASME Joint Thermophysics and Heat Transfer Conference. June 20-23, 1994, Colorado Springs, CO. [AIAA Paper](#), No. 94-2051, June 1994.
59. Riabov, V. V., and Provotorov, V. P. (1994). "The Structure of Multicomponent Nonequilibrium Viscous Shock Layers." 6th AIAA/ASME Joint Thermophysics and Heat Transfer Conference. June 20-23, 1994, Colorado Springs, CO. [AIAA Paper](#), No. 94-[2054](#), June 1994.
60. Riabov, V. V., and Botin, A. V. (1994). "Hypersonic Hydrogen Combustion in the Thin Viscous Shock Layer." 6th AIAA/ASME Joint Thermophysics and Heat Transfer Conference. June 20-23, 1994, Colorado Springs, CO. [AIAA Paper](#), No. 94-2027, June 1994.

PUBLISHED BEFORE 1992:

61. Botin, A. V., & Ryabov, V. V. (1991). Injection of hydrogen into the thin viscous shock layer," [Aerodynamics and Experimental Methods. Transactions of the 10th All-Union Conference on Rarefied Gas Dynamics](#), Vol. 2, Moscow Energy Inst., Moscow, 1991, pp. 71-78 [in Russian].
62. Provotorov, V. P., & Ryabov, V. V. (1990). Investigation of the structure of a multicomponent viscous shock layer. [Trudy TsAGI](#), No. 2436, pp. 152-164 [in Russian].
63. Botin, A. V., Gusev, V. N., Provotorov, V. P., Ryabov, V. V., & Chernikova, L. G. (1990). Investigation of the effect of physical processes on heat transfer to blunt bodies at low Reynolds numbers. [Trudy TsAGI](#), No. 2436, pp. 134-144 [in Russian].
64. Apolonskii, O. Yu., Babikov, P. E., Lebed', I. V., & Ryabov, V. V. (1989). Studying the streamlining of a blunted body by a vibrational-nonequilibrium dissociated gas. [Journal of Applied Mechanics and Technical Physics](#), 30(6), [970-976](#).
65. Ryabov, V. V. (1988). Transfer coefficient of multicomponent air with sublimation products of graphite. [Journal of Engineering Physics](#), 55(1), [786-791](#).
66. Molodtsov, V. K., & Ryabov, V. V. (1988). On local approximate solutions of the Navier-Stokes equations. [Trudy TsAGI](#), No. 2376, pp. 44-52 [in Russian].
67. Provotorov, V. P., & Ryabov, V. V. (1987). Nonsteady-state heat transfer upon shock wave reflection in a shock tube. [Journal of Applied Mechanics and Technical Physics](#), 28(5), [721-727](#).
68. Provotorov, V. P., & Ryabov, V. V. (1986). Application of exponential difference schemes to the problem of strong injection in a boundary layer. [Uchenye Zapiski TsAGI](#), Vol. 17, No. 1, pp. 47-54 [in Russian].
69. Molodtsov, V. K., & Ryabov, V. V. (1985). Investigation of structural features of rarefied gas flows about a sphere using Navier-Stokes equations. In: [Rarefied Gas Dynamics, Proceedings of the 13th International Symposium on Rarefied Gas Dynamics](#) (Novosibirsk, USSR, July 1982), edited

- by O. M. Belotserkovskii, M. N. Kogan, S. S. Kutateladze, and A. K. Rebrov. New York: Plenum Press, Vol. 1, pp. 535-541.
70. Lebed', I. V., & Ryabov, V. V. (1985). Calculation of the transport coefficients in multicomponent gas mixtures. *Journal of Engineering Physics*, 48(1), [194-198](#).
 71. Ryabov, V. V. (1985). Some characteristics of numerical solutions to parabolized Navier-Stokes equations. *Uchenye Zapiski TsAGI*, Vol. 16, no. 1, pp. 8-14 [in Russian].
 72. Lebed', I. V., & Ryabov, V. V. (1984). The closed system of gas-dynamic equations and transport coefficients in rotational excited gases. *Trudy TsAGI*, No. 2256, 1984, pp. 1-24 [in Russian].
 73. Provotorov, V. P., & Ryabov, V. V. (1983). Effect of chemical reactions on the flow of air in a viscous shock layer. *Fluid Mechanics - Soviet Research*, 12(6), 17-25. [**Uchenye Zapiski TsAGI, 1984, Vol. 15, no. 4, pp. 40-47**]
 74. Lebed', I. V., & Ryabov, V. V. (1983). Rotational relaxation time and transfer coefficients in diatomic gases. *Journal of Applied Mechanics and Technical Physics*, 24(4), 447-454.
 75. Ryabov, V. V. (1983). Approximate calculation of transport coefficients in multi-component mixtures. *Journal of Engineering Physics*, 44(2), [183-189](#).
 76. Gusev, V. N., Provotorov, V. P., & Ryabov, V. V. (1981). Effect of physical and chemical nonequilibrium on simulation of hypersonic rarefied-gas flows. *Fluid Mechanics - Soviet Research*, 10(5), 123-135. [**Uchenye Zapiski TsAGI, 1981, Vol. 12, no. 1, pp. 64-74**]
 77. Provotorov, V. P., & Ryabov, V. V. (1981). Investigation of a nonequilibrium hypersonic viscous shock layer. *Trudy TsAGI*, No. 2111, pp. 142-156 [in Russian].
 78. Provotorov, V. P., & Ryabov, V. V. (1981). A study of hypersonic flows in a thin viscous shock layer in the presence of nonequilibrium dissociation and ionization processes. *Uchenye Zapiski TsAGI*, Vol. 12, no. 5, pp. 55-63 [in Russian].
 79. Ryabov, V. V. (1980). Numerical study of supersonic flow of a binary gas mixture over a sphere. In: *Molecular Gas Dynamics*. Institute of Thermophysics, Siberian Branch of the USSR Academy of Sciences, Novosibirsk, pp. 46-57 [in Russian].
 80. Ryabov, V. V. (1980). Calculation of transport coefficients of equilibrium dissociating air. *Trudy TsAGI*, No. 2045, pp. 3-14 [in Russian].
 81. Ryabov, V. V. (1980). Numerical investigation of the flow of nitrogen past a sphere with allowance for rotational relaxation. *Fluid Dynamics*, 15(2), [320-324](#).
 82. Molodtsov, V. K., & Ryabov, V. V. (1979). On the validity of the Navier-Stokes equations for supersonic rarefied flows over a sphere. *Uchenye Zapiski TsAGI*, Vol. 10, no. 6, pp. 30-36 [in Russian]
 83. Lebed', I. V., & Ryabov, V. V. (1979). Quantum effects in rotational relaxation of a freely expanding gas. *Journal of Applied Mechanics and Technical Physics*, 20(1), [1-3](#).
 84. Gusev, V. N., Klimova, T. V., & Ryabov, V. V. (1978). Similarity of flows in strongly underexpanded jets of viscous gas. *Fluid Dynamics*, 13(6), [886-893](#).
 85. Ryabov, V. V. (1978). Rotational relaxation in a spherically expanding viscous gas flow. *Uchenye Zapiski TsAGI*, Vol. 9, no. 5, pp. 58-64 [in Russian]. (<http://adsabs.harvard.edu/abs/1978ZaTsA...9..58R>)
 86. Gusev, V. N., & Ryabov, V. V. (1978). Spherical expansion of a binary gas mixture into a flooded space. *Fluid Dynamics*, 13(2), [249-256](#).
 87. Gusev, V. N., Erofeev, A. I., Perepukhov, V. A., Ryabov, V. V., & Tolstykh, A. I. (1977). Hypersonic flow characteristics in the transition regime. In: *Applied Aerodynamics of Spacecraft (Prikladnaya Aerodinamika Kosmicheskikh Apparatov)*. Kiev, Naukova Dumka, pp. 64-69 [in Russian].
 88. Gusev, V. N., Erofeev, A. I., Klimova, T. V., Perepukhov, V. A., Ryabov, V. V., & Tolstykh, A. I. (1977). Analytical and experimental studies of hypersonic rarefied flows over bodies of simple geometries. *Trudy TsAGI*, No. 1855, pp. 1-43 [in Russian].
 89. Gusev, V. N., Klimova, T. V., & Ryabov, V. V. (1976). The basic characteristics of the variation of aerodynamic parameters in the transition region at hypersonic flow velocities. *Uchenye Zapiski TsAGI*, Vol. 7, no. 3, pp. 47-54 [in Russian].