

PhD Igor Miroshnichenko – Curriculum Vitae

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Contact address

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Current position / Affiliations

Senior Researcher, Regional Scientific and Educational Mathematical Centre, Tomsk state university, Russia

Associate Professor, Theoretical Mechanics Department, Tomsk state university, Russia

Researcher, Laboratory on Convective Heat and Mass Transfer, Tomsk state university, Russia

Education

10/2014 – 07/2018 PhD in Fluid mechanics, Title of thesis: Turbulent modes of coupled thermogravitational convection and thermal radiation in areas with local energy sources, Tomsk state university, Tomsk

09/2012 – 06/2014 Master studies in Fluid mechanics, Tomsk state university, Tomsk

09/2008 – 06/2012 Undergraduate studies in Mechanics, Tomsk state university, Tomsk

Research Interests

- 1) Turbulence
- 2) Numerical simulations
- 3) Fluid dynamics
- 4) Natural convection modeling

Citations and Other Statistics (as of June 2019)

1) Social Science Citation Index (Web of Science): over 376 citations, h-index 12

3) Scopus: 452 citations, h-index 12

Selected Research Projects and Grants (Project Leader)

2019 – 2021 «Mathematical modeling of complex heat transfer in building structures», project of the Russian Science Foundation, Tomsk, Russia.

Selected Research Projects and Grants (Member of the Research Team)

2014 – 2016 « Modeling of heat and mass transfer processes and phase changing in heat pipes», government task of the Ministry of Education and Science of the Russian Federation, Tomsk, Russia.

2014 – 2015 «Mathematical modeling unsteady regimes conjugate convective heat transfer in systems containing the phase change material», grant of Russian Foundation for Basic Research, Tomsk, Russia.

2015 – 2016 «Mathematical modeling of unsteady regimes of conjugated convective-radiative heat transfer in technological objects taking into account external hydrodynamic and thermal effects», Grants Council, Tomsk, Russia

2017 – 2018 «Mathematical modeling of convective heat transfer in media with variable physical properties», Grants Council, Tomsk, Russia

2020 – 2022 «Simulation of active and passive cooling systems of heat-generating elements in electronics and power engineering», project of the Russian Science Foundation, Tomsk, Russia.

Conference and Seminar Presentations

- 2020 XIII International Conference of Students and Young Scientists "Prospects of Fundamental Sciences Development", Tomsk.
- 2019 The 7th Asian Symposium on Computational Heat Transfer and Fluid Flow, Tokyo; XXII School-seminar of young scientists and specialists under the guidance of Academician A.I. Leontiev "Problems gas dynamics and heat and mass transfer in energy installations", Moscow; XII All-Russian Congress on Fundamental Problems of Theoretical and Applied Mechanics, Ufa.
- 2018 11th International Conference on Thermal Engineering (ICTEA-2018), Doha; XIII International Conference of Students and Young Scientists "Prospects of Fundamental Sciences Development", Tomsk; 7th Russian National Conference on Heat and Mass Transfer (RNCHT-7), Moscow.
- 2017 XXI School-seminar of young scientists and specialists under the guidance of Academician A.I. Leontiev "Problems of gas dynamics and heat and mass transfer in power installations ", St. Petersburg; XXXIII Siberian Thermophysical Seminar, Novosibirsk; VI International Scientific and Technical Conference of Young Scientists, Post-Graduates and Students "High Technologies in Modern Science and Technology", Tomsk.
- 2016 XIII International Conference of Students and Young Scientists "Prospects of Fundamental Sciences Development", Tomsk; IX All-Russian Conference "Fundamental and Applied Problems of Modern Mechanics", Tomsk; XIV All-Russian school-conference with international participation "Actual problems of thermophysics and physical hydrodynamics", Novosibirsk.
- 2015 IV International Scientific and Technical Conference of Young Scientists, Post-Graduates and Students "High Technologies in Modern Science and Technology", Tomsk; XII International Conference of Students and Young Scientists "Prospects of Fundamental Sciences Development", Tomsk; XX School-seminar of young scientists and specialists under the guidance of Academician A.I. Leontiev "Problems gas dynamics and heat and mass transfer in energy installations", Zvenigorod; All-Russian Conference "XXXII Siberian Thermophysical Seminar", Novosibirsk; XXI International Scientific Conference of Students and Young Scientists "Modern Technologies and Technologies", Tomsk.
- 2014 XIII All-Russian school-conference with international participation "Actual problems of thermophysics and physical hydrodynamics", Novosibirsk;

Refereed Journals

- 2020 Miroshnichenko I.V., Gibanov N.S., Sheremet M. A. Numerical analysis of heat source surface emissivity impact on heat transfer performance in a rectangular enclosure at high Rayleigh numbers // International Journal of Computational Methods in Engineering Science and Mechanics. – 2020. – Vol. 21. – Pp. 205-214.
- Sivaraj C., Miroshnichenko I.V., Sheremet M. A. Influence of thermal radiation on thermogravitational convection in a tilted chamber having heat-producing solid body // International Communications in Heat and Mass Transfer. – 2020. – Vol. 115. – 104611.
- Miroshnichenko I.V., Sheremet M. A. Numerical simulation of heat transfer in an enclosure with time-periodic heat generation using finite-difference method // Lecture Notes in Computer Science. – 2020. – Vol. 12143. – Pp. 149-162.

Mikhailenko S.A., Miroshnichenko I.V., Sheremet M.A. Thermal radiation and natural convection in a large-scale enclosure heated from below: Building application // *Building Simulation*. – in press

2019

Miroshnichenko, I.V., Sheremet, M.A., Mohamad, A.A. The influence of surface radiation on the passive cooling of a heat-generating element// *Energies*. -2019. – Vol. 12. – Article number en12060980.

Miroshnichenko I.V., Sheremet M. A. Effect of Thermal Conductivity and Emissivity of Solid Walls on Time-Dependent Turbulent Conjugate Convective-Radiative Heat Transfer // *Journal of Applied and Computational Mechanics*. – 2019. – Vol. 5. – Pp. 207-216.

2018

Miroshnichenko I.V., Sheremet M. A. Turbulent natural convection heat transfer in rectangular enclosures using experimental and numerical approaches: A review // *Renewable and Sustainable Energy Reviews*. – 2018. – Vol. 82. – Pp. 40-59.

Miroshnichenko I.V., Sheremet M. A. Radiation effect on conjugate turbulent natural convection in a cavity with a discrete heater // *Applied Mathematics and Computation*. – 2018. – Vol. 321. – Pp. 358-371.

Miroshnichenko I.V., Sheremet M. A. Turbulent natural convection combined with thermal surface radiation inside an inclined cavity having local heater // *International Journal of Thermal Sciences*. -2018. – Vol. 124. – Pp. 122-130.

Chamkha A.J., Miroshnichenko I.V., Sheremet M.A. Unsteady conjugate natural convective heat transfer and entropy generation in a porous semi-circular cavity // *ASME Journal of Heat Transfer*. – 2018. – Vol. 140. – Issue 6. – Article number 062501

Miroshnichenko I.V., Sheremet M.A., Oztop H.F., Abu-Hamdeh N. Natural convection of alumina-water nanofluid in an open cavity having multiple porous layers // *International Journal of Heat and Mass Transfer*. – 2018. – Vol. 125. – Pp. 648–657.

Miroshnichenko I.V., Sheremet M.A., Oztop H.F., Abu-Hamdeh N. Natural convection of Al₂O₃/H₂O nanofluid in an open inclined cavity with a heat-generating element // *International Journal of Heat and Mass Transfer*. – 2018. – Vol. 126. – Pp. 184–191.

Miroshnichenko I.V., Sheremet M.A., Chamkha A.J. Turbulent natural convection combined with surface thermal radiation in a square cavity with local heater // *International Journal of Numerical Methods for Heat & Fluid Flow*. – 2018. – Vol. 28. – Issue 7. – Pp. 1698–1715.

2017

Miroshnichenko, I.V., Sheremet, M.A., Pop, I. Natural convection in a trapezoidal cavity filled with a micropolar fluid under the effect of a local heat source // *International Journal of Mechanical Sciences*. – 2017. – Vol. 120. – Pp. 182-189.

Miroshnichenko I.V., Chamkha A.J., Sheremet M.A. Numerical analysis of unsteady conjugate natural convection of hybrid water-based nanofluid in a semicircular cavity // *Journal of Thermal Science and Engineering Applications*. – 2017. – Vol. 9. – Pp. 1-9.

Miroshnichenko I.V., Sheremet M.A. Turbulent Natural Convection and Surface Radiation in a Closed Air Cavity with a Local Energy Source // *Journal of Engineering Physics and Thermophysics*. 2017. - Vol. 90. – Pp. 557-563.

Miroshnichenko I.V., Sheremet M.A., Pop I., Ishak A. Convective heat transfer of micropolar fluid in a horizontal wavy channel under the local heating // *International Journal of Mechanical Sciences*. – 2017. – Vol. 128-129. – Pp. 541-549.

2016

Miroshnichenko, I.V., Sheremet, M.A., Oztop, H.F., Al-Salem, K. MHD natural convection in a partially open trapezoidal cavity filled with a nanofluid // *International Journal of Mechanical Sciences*. – 2016. – Vol. 119. – Pp. 294-302.

Miroshnichenko, I.V., Sheremet, M.A., Mohamad, A.A. Numerical simulation of a conjugate turbulent natural convection combined with surface thermal radiation in an enclosure with a heat source // *International Journal of Thermal Sciences*. -2016. – Vol. 109. – Pp. 172-181.

Miroshnichenko I.V., Sheremet M.A. Effect of surface radiation on transient natural convection in a wavy-walled cavity // *Numerical Heat Transfer; Part A: Applications*. -2016. – Vol. 69.- Pp. 369-382.

Miroshnichenko I.V., Sheremet M.A. Effect of surface emissivity on conjugate turbulent natural convection in an air-filled cavity with a heat source // Key Engineering Materials. -2016.- Vol. 685.-Pp. 315-319.

Miroshnichenko I.V., Sheremet M.A. Effect of thermophysical properties of solid walls on turbulent modes of complex heat transfer in an enclosure // Key Engineering Materials. -2016.- Vol. 683.-Pp. 540-547.

2015

Miroshnichenko I., Sheremet M. Comparative study of standard $k-\varepsilon$ and $k-\omega$ turbulence models by giving an analysis of turbulent natural convection in an enclosure // EPJ Web of Conferences. – 2015. – Vol. 82. – Pp. 01057-1–01057-4.

Sheremet M.A., Miroshnichenko I.V. Numerical study of turbulent natural convection in a cube having finite thickness heat-conducting walls // Heat and Mass Transfer. – 2015. –Vol. 51.-Pp. 1559-1569.

Miroshnichenko I.V., Sheremet M.A. Effect of buoyancy force on turbulent modes of complex heat transfer in an air-filled square cavity // IOP Conference Series: Materials Science and Engineering. – 2015. –Vol. 93. Pp. 1-4.

Miroshnichenko I.V., Sheremet M.A. Numerical simulation of turbulent natural convection combined with surface thermal radiation in a square cavity // International Journal of Numerical Methods for Heat and Fluid Flow. – 2015. – Vol. 25. – Pp. 1600-1618.

Martyushev S.G., Miroshnichenko I.V., Sheremet M.A. Influence of the geometric parameter on the regimes of natural convection and thermal surface radiation in a closed parallelepiped // Journal of Engineering Physics and Thermophysics. – 2015. – Vol. 88. – Pp. 1522-1529.

2014

Martyushev S.G., Miroshnichenko I.V., Sheremet M.A. Numerical Analysis of Spatial Unsteady Regimes of Conjugate Convective-Radiative Heat Transfer in a Closed Volume with an Energy Source // Journal of Engineering Physics and Thermophysics. – 2014. – Vol. 87. – Pp. 124 -134.