

Anton V. Kulchitsky

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Education

1994–1999 **Ph.D.** (Candidate of physical and mathematical science)
M.V. Lomonosov Moscow State University, Mechanics and Mathematics department
Thesis: “Mathematical Modeling of Evaporation of Multicomponent Media”
Scientific adviser: Professor Nickolay Smirnov

1989–1994 **M.S.**
M.V. Lomonosov Moscow State University
Mechanics and Mathematics department
1994 graduated with honors, GPA 4.0

Professional Experience

2012–today **Research Assistant Professor**
University of Alaska Fairbanks, Institute of Northern Engineering

2012–2013 **Adjunct Professor of Mathematics**
University of Alaska Fairbanks, Department of Mathematics and Statistics

2007–2012 **High Performance Computing Specialist**
University of Alaska Fairbanks, Arctic Region Supercomputing Center

2005–2007 **Post Doctoral Fellow**
University of Alaska Fairbanks, Arctic Region Supercomputing Center

2003–2005 **Post Doctoral Fellow**
University of Alaska Fairbanks, Geophysical Institute

2000–2003 **Visiting Researcher**
The University of Electro-Communications (Tokyo, Japan),
Sugadaira Space Radio Observatory and Department of Electronic Engineering

1998–2000 **Researcher, Adjunct Professor of Mathematics**
M.V. Lomonosov Moscow State University (Moscow, Russia),
Wave Process Laboratory and Probability Theory Dept.

Awards

2014 NASA Director’s Group Award to ARRM Alternate Concept Study Team
from NASA Langley Research Center.

1996 the President of Russia grant for Ph.D. students

Professional Affiliations

2001–today American Geophysical Union (AGU)
2010–today Association for Computing Machinery (ACM)

Publications

Papers in Refereed Journals

- [1] Ben Nye, Anton V. Kulchitsky, and Jerome B. Johnson. “Intersecting dilated convex polyhedra method for modeling complex particles in discrete element method”. In: *International Journal for Numerical and Analytical Methods in Geomechanics* 38.9 (2014), pp. 978–990. ISSN: 1096-9853. DOI: 10.1002/nag.2299. URL: <http://dx.doi.org/10.1002/nag.2299>.
- [2] V R Dushin, A V Kulchitskiy, V A Nerchenko, V F Nikitin, E S Osadchaya, Yu G Phylippov, and N N Smirnov. “Mathematical simulation for non-equilibrium droplet evaporation”. In: *Acta Astronautica* 63.11 (2008), pp. 1360–1371. DOI: doi:10.1016/j.actaastro.2008.05.021.
- [3] N N Smirnov, V N Pushkin, V R Dushin, and A V Kulchitskiy. “Microgravity investigation of laminar flame propagation in monodisperse gas–droplet mixtures”. In: *Acta Astronautica* 61.7 (2007), pp. 626–636. DOI: doi:10.1016/j.actaastro.2006.12.014.
- [4] Anton Kulchitsky, Sergei Maurits, Brenton Watkins, and Jeffrey McAllister. “ $E \times B$ drift simulation in an Eulerian ionospheric model using the total variation diminishing numerical scheme”. In: *Journal of Geophysical Research: Space Physics* 110.A9 (2005). DOI: doi:10.1029/2005JA011033.
- [5] Anton V Kulchitsky, Yoshiaki Ando, and Masashi Hayakawa. “Numerical analysis on the propagation of ULF/ELF signals in the lithosphere with highly conductive layers”. In: *Physics and Chemistry of the Earth, Parts A/B/C* 29.4 (2004), pp. 495–500.
- [6] Victor Y Trakhtengerts, Dmitriy I Iudin, Anton V Kulchitsky, and Masashi Hayakawa. “Electron acceleration by a stochastic electric field in the atmospheric layer”. In: *Physics of Plasmas* 10.8 (2003), pp. 3290–3296.
- [7] Victor Y Trakhtengerts, Dmitriy I Iudin, Anton V Kulchitsky, and Masashi Hayakawa. “Kinetics of runaway electrons in a stochastic electric field”. In: *Physics of Plasmas* 9.6 (2002), pp. 2762–2766.
- [8] O Molchanov, A Kulchitsky, and M Hayakawa. “Inductive seismo-electromagnetic effect in relation to seismogenic ULF emission”. In: *Natural Hazards and Earth System Science* 1.1/2 (2001), pp. 61–67.
- [9] A. V. Kulchitskii and N. N. Smirnov. “Allowing for non-equilibrium effects at evaporation of a solution droplet”. In: *Russian Journal of Engineering Thermophysics* 10.4 (2000), pp. 293–314.
- [10] N N Smirnov and A V Kulchitski. “Unsteady state evaporation in weightlessness”. In: *Acta astronautica* 39.8 (1996), pp. 561–568. DOI: 10.1016/S0094-5765(96)00162-2.

Papers in Refereed Collections or Books

- [1] O.A. Molchanov, A. V. Kulchitsky, and M. Hayakawa. “ULF emission due to inductive seismo-electromagnetic effect”. In: *Seismo Electromagnetics (Lithosphere – Atmosphere – Ionosphere Coupling)*. Ed. by M. Hayakawa and O.A. Molchanov. Tokyo, Japan: TERRAPUB, 2002, pp. 153–162.
- [2] N. N. Smirnov, V. F. Nikitin, A. V. Kulchitsky, V. M. Shevtsova, and J. S. Legros. “Nonequilibrium effects in gaseous and heterogeneous detonations”. In: *Advances in Confined Detonations*. Ed. by G. D. Roy. Moscow, Russia: TORUS PRESS Ltd., 2002.
- [3] N. N. Smirnov, V. F. Nikitin, A. V. Kulchitsky, A. P. Boychenko, and M. V. Tyurnikov. “Experimental and Theoretical investigations of Heterogeneous Detonations in Pulse Detonation Devices”. In: *Control of Detonation Processes*. Ed. by Roy, Frolov, Netzer, and Borisov. Moscow, Russia: Elex-KM Publ., 2000, pp. 212–215.

Conference Proceedings Full Articles

- [1] Anton V. Kulchitsky and Jerome B. Johnson. “Broad phase hybrid contact detection scheme for high performance computing”. In: *6th International Conference on Discrete Element Methods and related techniques*. Ed. by Graham Mustoe. Colorado School of Mines. 2013, pp. 96–101. ISBN: 0-918062-20-9.
- [2] Anton V. Kulchitsky, Ben Nye, and Jerome B. Johnson. “Intersecting dilated convex polyhedra method for representing general polyhedral particles in COUPi DEM model”. In: *6th International Conference on Discrete Element Methods and related techniques*. Ed. by Graham Mustoe. Colorado School of Mines. 2013, pp. 469–474. ISBN: 0-918062-20-9.
- [3] N. N. Smirnov, V. F. Nikitin, V. R. Dushin, and A. V. Kulchitsky. “Premixed gaseous flame acceleration due to instability induced by geometrical characteristics of combustion chambers”. In: *Proceedings of the 54th International Astronautical Congress of the International Astronautical Federation*. American Institute of Aeronautics and Astronautics, Inc. Reston, VA, 2003. DOI: 10.2514/6.2003-03-10.
- [4] A. V. Kulchitsky, O. A. Molchanov, and M. Hayakawa. “Simulation of Seismo Electro-Magnetic effects induced by shear crack”. In: *Proceedings of The Applied Computational Electromagnetic Society (ACES) conference*. Monterey, 2002, pp. 139–145.
- [5] Anton V Kulchitsky, OA Molchanov, and M Hayakawa. “ULF emission induced by tension and shear cracks”. In: *Electromagnetic Compatibility, 2002 3rd International Symposium on*. IEEE. 2002, pp. 9–12.
- [6] V. Yu. Trakhtengerts, D. I. Iudin, A. V. Kulchitsky, and M. Hayakawa. “Runaway effects in an alternating electric field”. In: *Proceedings of The Applied Computational Electromagnetic Society (ACES) conference*. Monterey, 2002, pp. 641–647.
- [7] N. N. Smirnov, V. F. Nikitin, A. V. Kulchitsky, J. C. Legros, and V. M. Shevtsova. “Detonation Initiation in Pulse Detonating Devices”. In: *Proc. of the 13th ONR Propulsion Meeting*. Ed. by G. D. Roy and P. J. Strykowski. 2000, pp. 213–232.

Conference Proceedings Abstracts and Presentations

Around 40.

Committies etc.

A member of Technical Committee at 2009 Symposium on Application Accelerators in High Performance Computing (SAAHPC’09).

A member of Program Committee at 2010 Symposium on Application Accelerators in High Performance Computing (SAAHPC’10).

Reviewed for Parallel Computing Magazine in 2010. Reviewed for Journal of Computational and Applied Mathematics in 2013.