Denis Mironov

Quantitative Researcher | Data Scientist

+1 205 243 79 66
denismironov93@yahoo.com
dmironov1993
denismironov

Skills & Abilities

Main — Classical Machine Learning, Elements of deep learning, Optimization, Probability Theory, Statistics, Applied Mathematics and Physics, Mathematical Modelling of Physics Phenomena, Scientific Research

Programming — Python, SQL, R, C++

Research and Work Experience

March 2020 – current — **Crabel Capital Management**, Los Angeles, USA,
Quantitative Researcher.

Oct 2016 – July 2018 — **Moscow Institute of Physics and Technology**, Moscow, Russia,
Graduate Researcher (PhD student in Physics).

Derived expressions explicitly revealing the sideways force dependence on $\gamma\tau_w$ with a maximum at $\gamma\tau_w = O(1)$, where γ is the kink growth rate and τ_w is the resistive wall time. Proved that the amplitude of the sideways force produced by the kink modes must be much smaller than expected from the previously existing scalings.
[1] D.V. Mironov and V.D. Pustovitov, Sideways force due to coupled kink modes in tokamaks, **Physics of Plasmas** 24, 092508 (2017)

July 2017 – Oct 2017 — **Skolkovo Institute of Science and Technology**, Moscow, Russia,
Research Intern at Center for Design, Manufacturing and Materials.

Development of an analytical model for predicting a cross-sectional profile of a nanobubble.
Applied methods of molecular dynamics with Lammps and AtomEye, also programmed in Fortran

June 2014 – July 2016 — **National Research Center "Kurchatov Institute"**, Moscow, Russia,
Engineer at Laboratory of Plasma Process Simulators.

Developed analytical models to calculating kink-produced electromagnetic force on the vacuum vessel wall in a tokamak. Presented results of the work at 5 conferences, including 3 hosted by European Physical Society (EPS) on plasma physics. Co-authored 1 peer-reviewed publication in **Physics of Plasmas** and 3 as conference proceedings of EPS conference:
[1] D.V. Mironov and V.D. Pustovitov, Analytical model of the multiple-mode sideways forces in tokamaks, proceeding of the 43rd EPS Conference on Plasma Physics, P4.075 (2016)
[2] D.V. Mironov and V.D. Pustovitov, Analytical model of wall forces produced by kink perturbations in tokamaks, **Physics of Plasmas** 22, 052502, (2015)
[3] D.V. Mironov and V.D. Pustovitov, Analytical model of wall force produced by kink modes combined with plasma vertical displacement, 42nd EPS Conference on Plasma Physics, proceeding, P5.183 (2015)
[4] D.V. Mironov and V.D. Pustovitov, Revisited thin-wall model of wall forces produced by kink modes in tokamaks, proceeding of the 41st EPS Conference on Plasma Physics, P4.043 (2014)

Education

Sep 2014 – July 2016 — **Moscow Institute of Physics and Technology (MIPT)**, Moscow, Russia,
Master of Science in Applied Mathematics and Physics, GPA: 4.9/5.0.

Theoretical physics (plasma physics I-V, dynamics of continuous media, fluid mechanics)

Sep 2010 – July 2014 — **Moscow Institute of Physics and Technology (MIPT)**, Moscow, Russia,
Bachelor of Science in Applied Mathematics and Physics, GPA: 4.5/5.0.

Computer science, Computational mathematics, Numerical methods, Analytical geometry, Linear algebra, Mathematical analysis, Harmonic analysis, Differential equations, Theory of probability, Complex analysis, Equations of mathematical physics, General physics, Laboratory methods, Theoretical physics

Independent Studies

Oct 2018 – Dec 2018 **mlcourse.ai: Open Machine Learning Course**,
Decision Trees, k-Nearest Neighbors, Linear classification and Regression, Ensembles of algorithms and random forest, Feature engineering and feature selection, Unsupervised learning, Vowpal Wabbit, Time series analysis, Gradient boosting.
Ranked 13/2200, `https://mlcourse.ai/rating`

2015 **Passed Theoretical Minimum Landau on Mathematics I**,
Integration, vector algebra, tensor analysis, ordinary differential equations.
`http://theorminimum.itp.ac.ru/math1/`

2010 **Moscow Institute of Physics and Technology**,
Federal Correspondence School of Physics and Technology, training in mathematics and physics.
Grades: Mathematics 5.0/5.0 and Physics 5.0/5.0

Data Science training and projects (kaggle)

2019 Predict whether a flight will be delayed for more than 15 minutes; 2/1614 - kaggle private leaderboard

2018 Predict the number of recommendations for a Medium article; 28/1134 - kaggle private leaderboard

2018 Intruder Detection through Webpage Session Tracking; 74/3000 - kaggle private leaderboard

Achievements and Awards

2019 **Second degree diploma**, *Olympiad in Mathematical methods of Economics Analysis Higher School of Economics*.

2019 **Prize-winner**, *Olympiad in Mathematics and English (New Economic School)*.

2018 **Third degree diploma**, *Olympiad in Mathematical methods of Economics Analysis Higher School of Economics*.

Feb-July 2016 **A.P. Alexandrov scholarship**, *high academic/scientific merits, Kurchatov Institute*.

Oct-Dec 2015 **A.P. Alexandrov scholarship**, *high academic/scientific merits, Kurchatov Institute*.

Sep-Dec 2015 **MIPT special scholarship**, *high academic/scientific performance*.

Nov 2015 **First prize**, *58th MIPT scientific conference, section: physics of plasmas*.

Feb-July 2015 **MIPT special scholarship**, *high academic/scientific performance*.

Mar-Jun 2015 **A.P. Alexandrov scholarship**, *high academic/scientific merits, Kurchatov Institute*.

2014 **I.V. Kurchatov prize**, *the best student scientific paper*.

Sep-Dec 2014 **MIPT special scholarship**, *high academic/scientific performance*.

Sep-Dec 2014 **A.P. Alexandrov scholarship**, *high academic/scientific merits, Kurchatov Institute*.

Nov 2014 **First prize**, *57th MIPT scientific conference, section: physics of high temperatures*.

2010 **Second degree diploma**, *PHYSTECH olympiad in physics*.

2010 **Third degree diploma**, *PHYSTECH olympiad in mathematics*.

Languages

English Fluent

Russian Native