Vadim Munirov

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Education

Princeton University **Princeton, NJ**
Ph.D. in Astrophysical Sciences (Plasma Physics) *August 2014 – July 2020*
Thesis title: Radiative Processes in Astrophysical and Laboratory Plasmas

University of California, San Diego **La Jolla, CA**
Ph.D. student in Physics *September 2013 – June 2014*

Moscow Institute of Physics and Technology **Moscow, Russia**
M.Sc. in Applied Mathematics and Physics (with honors) *September 2011 – June 2013*
Thesis title: Investigation of Interaction of Nonuniformly Charged Macroparticles
B.Sc. in Applied Mathematics and Physics (with honors) *September 2007 – June 2011*

Research and Work Experience

University of California, Berkeley **Berkeley, CA**
Postdoctoral Scholar, Professor Jonathan Wurtele's research group *August 2020 – present*

- Advisor: Jonathan Wurtele (wurtele@berkeley.edu)
- Analytically and numerically demonstrated how to create space-time quasicrystals in plasma by autoresonantly exciting multiphase ion-acoustic and plasma waves
- Developed and implemented ionization model for molecules, worked on parts of the code for modeling plasma grating experiments
- Supervised research projects for undergraduate students: Nicolas Kalem (simulation of charged and neutral particles motion in antimatter traps) and Lichuan Xu (quantum radiation reaction effects on the motion of charged particles in intense electromagnetic waves)

Princeton Plasma Physics Laboratory **Princeton, NJ**
Research Assistant *August 2014 – July 2020*

- Advisor: Nathaniel Fisch (fisch@princeton.edu)
- Quantified influence of kinetic effects on magnetic field generation in astrophysical plasmas due to radiative interaction
- Investigated the current drive and recoil effects in Bremsstrahlung absorption
- Quantified influence of plasma on cosmic microwave background (CMB)
- Developed Lyα Monte-Carlo radiative transfer Python code with finite correlation length turbulence (in collaboration with A.A. Kaurov from IAS)

Princeton University **Princeton, NJ**
Teaching Assistant *September 2016/18 – January 2017/19*

- Teaching assistant for a graduate course on "Plasma Waves and Instabilities" taught by Dr. Ilya Dodin (idodin@princeton.edu)

University of California, San Diego **La Jolla, CA**
Teaching Assistant *September 2013 – June 2014*

- Coordinated 20-30 undergraduate students in a physics lab; tutored semi-individually

Troitsk Institute for Innovation and Fusion Research **Moscow, Russia**
Research Assistant *September 2010 – June 2013*

- Advisor: Anatoly Filippov (fav@triniti.ru)
- Analytically and numerically studied interaction of dielectric macroparticles in plasma as part of Master's and Bachelor's theses while studying at Moscow Institute of Physics and Technology

Publications

[1] **V.R. Munirov**, A.A. Kaurov, *Influence of turbulence on Lyman-alpha scattering*, arXiv:2208.13103, submitted to MNRAS (2022)

[2] **V.R. Munirov**, L. Friedland, J.S. Wurtele, *Multiphase nonlinear electron plasma waves*, arXiv:2205.14511, accepted to Phys. Rev. E (2022),

[3] **V.R. Munirov**, L. Friedland, J.S. Wurtele, *Autoresonant excitation of space-time quasicrystals in plasma*, Phys. Rev. Research 4, 023150 (2022), (Editors' Suggestion), (Featured in Physics)

[4] M.R. Edwards, **V.R. Munirov**, A. Singh, N.M. Fasano, E. Kur, N. Lemos, J.M. Mikhailova, J.S. Wurtele, and P. Michel, *Holographic plasma lenses*, Phys. Rev. Lett., 128, 065003 (2022), (Featured in Physics)

[5] **V.R. Munirov**, N.J. Fisch, *Radiation in equilibrium with plasma and plasma effects on cosmic microwave background*, Phys. Rev. E, 100, 023202 (2019)

[6] **V.R. Munirov**, N.J. Fisch, *Inverse Bremsstrahlung current drive*, Phys. Rev. E, 96, 053211 (2017), (Editors' Suggestion)

[7] **V.R. Munirov**, N.J. Fisch, *Radiative transfer dynamo effect*, Phys. Rev. E, 95, 013205 (2017)

[8] **V.R. Munirov**, A.V. Filippov, *Interaction of two dielectric macroparticles*, J. Exp. Theor. Phys., 117, 809-819 (2013)

[9] **V.R. Munirov**, A.V. Filippov, *Interaction of a dielectric macroparticle with a point charge in plasma*, J. Exp. Theor. Phys., 115, 527-534 (2012)

Talks/Conferences/Visits

- *64th Annual Meeting of the APS Division of Plasma Physics*. Spokane, WA, October 17–21, 2022
- *Journal Club of LULI, CNRS, CEA, Sorbonne Université, École Polytechnique*. Paris, France (over zoom), September 28, 2022
- *Hebrew University of Jerusalem, Racah Institute of Physics*. Jerusalem, Israel, May 10–June 10 and September 7–25, 2022
- *63rd Annual Meeting of the APS Division of Plasma Physics*. Pittsburgh, PA, November 8–12, 2021
- *CLEO: QELS Fundamental Science 2021*, San Jose, CA, May 9–14, 2021
- *61st Annual Meeting of the APS Division of Plasma Physics*. Fort Lauderdale, FL. October 21–25, 2019
- *Astro Coffee Seminar, Institute for Advanced Study*, Princeton, NJ. October 2, 2019
- *Space Physics Seminar, UC Berkeley*, Berkeley, CA. September 10, 2019
- *60th Annual Meeting of the APS Division of Plasma Physics*. Portland, OR. November 5–9, 2018

- *59th Annual Meeting of the APS Division of Plasma Physics*. Milwaukee, WI. October 23–27, 2017
- *58th Annual Meeting of the APS Division of Plasma Physics*. San Jose, CA. October 31–November 4, 2016
- *Princeton Graduate Seminar in Plasma Physics*, Princeton, NJ. November, 2015, 2016
- *Contest of Young Scientists, Engineers and Graduate Students in Memory of Academician A.P. Alexandrov*, Troitsk, Russia. February 27, 2013
- *Scientific-Coordination Session "Non-Ideal Plasma Physics"*. Moscow, Russia. December 6–7, 2012
- *Moscow Institute of Physics and Technology 55th Scientific Conference*. Dolgoprudny, Russia. November 19, 2012
- *VII International Conference on Plasma Physics and Plasma Technology PPPT-7*. Minsk, Belarus. September 17–21, 2012

Awards and Prizes

- Scholarship of Abramov-Frolov's fund (February 2007 – June 2011)
- Russian Presidential Scholarship for outstanding academic and research achievements (March 2012 – June 2013)

Skills and Professional Service

Computer skills: Python, C/C++, Fortran, LaTeX, MS Office

Language skills: Russian (native), English (fluent), Tatar (basic)

Service: Reviewer for EPL (Europhysics Letters)