VIACHESLAV M. SADYKOV

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EDUCATION

2019	PhD Applied Physics · *New Jersey Institute of Technology*
2015	MS Applied Mathematics & Physics · *Moscow Institute of Physics and Technology*
2013	BS Applied Mathematics & Physics · *Moscow Institute of Physics and Technology*

PROFESSIONAL EXPERIENCE

2021–present	Assistant Professor, *Physics & Astronomy Dept, Georgia State University*
2019–2020	Research Scientist, *NASA Ames Research Center (affiliate) / BAERI*
2015–2019	Graduate Research Assistant, *New Jersey Institute of Technology*
2015–2017	Graduate Teaching Assistant, *New Jersey Institute of Technology*
2014	Research Assistant, *BBSO, New Jersey Institute of Technology*
2010–2015	Senior Laboratory Assistant, *Space Research Institute of RAS, Russia*

RESEARCH INTERESTS

Forecasting of solar transient events; machine learning-aided analysis of multiline solar spectral observations; modeling of solar spectral lines and EUV emission; development and maintenance of databases of solar flares and in-flight radiation measurements.

SELECTED PUBLICATIONS

1. Sadykov, V.M. et al. "Prediction of Solar Proton Events with Machine Learning: Comparison with Operational Forecasts and "All-Clear" Perspectives". *Astrophys. J.* (2022), under review
2. Sadykov, V. M et al. "Compression of Solar Spectroscopic Observations: a Case Study of Mg II k Spectral Line Profiles Observed by NASA's IRIS Satellite". *CBMI 2021*. 2021, pp. 1–6. DOI: 10.1109/CBMI50038.2021.9461879
3. Sadykov, V. M., I. N. Kitiashvili, W. K. Tobiska, and M. Guhathakurta. "Radiation Data Portal: Integration of Radiation Measurements at the Aviation Altitudes and Solar-Terrestrial Environment Observations". *Space Weather* **19**.1, e02653 (2021), e02653. DOI: 10.1029/2020SW002653
4. Sadykov, V.M., I. N. Kitiashvili, A. G. Kosovichev, and A. A. Wray. "Connecting Atmospheric Properties and Synthetic Emission of Shock Waves Using 3D RMHD Simulations of the Quiet Sun". *Astrophys. J.* **909**.1, 35 (2021), p. 35. DOI: 10.3847/1538-4357/abd9c7
5. Sadykov, V. M. and A. G. Kosovichev. "Relationships between Characteristics of the Line-of-sight Magnetic Field and Solar Flare Forecasts". *Astrophys. J.* **849**.2, 148 (2017), p. 148. DOI: 10.3847/1538-4357/aa9119
6. Sadykov, V. M., A. G. Kosovichev, V. Oria, and Gelu M. Nita. "An Interactive Multi-instrument Database of Solar Flares". *Astrophys. J. Suppl.* **231**.1, 6 (2017), p. 6. DOI: 10.3847/1538-4365/aa79a9
7. Sadykov, V. M. et al. "Properties of Chromospheric Evaporation and Plasma Dynamics of a Solar Flare from IRIS Observations". *Astrophys. J.* **805**.2, 167 (2015), p. 167. DOI: 10.1088/0004-637X/805/2/167

OTHER SIGNIFICANT PRODUCTS

1. Sadykov, V.M., Kitiashvili, I.N., Tobiska, W.K., Guhathakurta, M. "Radiation Data Portal". 2020. The web-accessible database for the search and visualization of the Automated Radiation Measurements for Aerospace Safety (ARMAS) experiment data. Accessed on 01/28/2022 at https://data.nas.nasa.gov/helio/portals/rdp/
2. Sadykov, V.M., Kosovichev A.G., Oria V., Nita G.M., Gupta, R., Wang, W. "An Interactive Multi-Instrument Database of Solar Flares". 2018. The web-accessible database for the search and visualization of solar flares based on their physical properties implemented under NASA NAS Helioportal. Accessed on 01/28/2022 at https://data.nas.nasa.gov/helio/portals/solarflares/

CURRENT EXTERNAL AWARDS / PROJECTS

2020–present "Machine Learning Tools for Predicting Solar Energetic Particle Hazards" (Co-PI, NASA Early-Stage Innovation project). GSU Sub-Award: $119,039.00

2020–present "Collaborative Study: Intercomparison of 3D MHD Simulations of the Solar Photosphere and Observations: A Case Study in Preparation for the DKIST Era" (PI, NSF project). GSU Award: $45,073.00

2021–present "Synergy of Global Modeling and Data Assimilation Analysis to Reconstruct and Forecast Solar Activity" (Co-I, NASA). No funding requested.

2022–present "Consequences Of Fields and Flows in the Interior and Exterior of the Sun (COFFIES)" (Co-I, NASA). GSU Award: $500,000.00.

UNDERGRADUATE COURSES TAUGHT

Spring 2021 PHYS2211K. "Principles of Physics 1", 4 sections, online.

Fall 2021 ASTR1010. "Astronomy of the Solar System", 3 sections, in-person.

Fall 2021 PHYS4700. "Electricity and Magnetism", 1 section, in-person.

GRADUATE COURSES DEVELOPED

Spring 2022 ASTR8710. "Cosmic Electrodynamics", developed for independent study.

Fall 2022 ASTR8140/PHYS8140. "Introduction to Solar Physics and Space Weather", a full-scale graduate course.

MENTORING AND ADVISING

Fall 2021 1 Ph.D. student, 3 B.S. students.

Spring 2022 1 Ph.D. student, 4 B.S. students.

PROFESSIONAL SERVICE

2021–present Team co-lead, COSPAR ISWAT, Team O2-03 "Data archive preparation and implementation to advance Machine Learning activities for space weather forecasting in support of human exploration"

2016–present Reviewer, the Astrophysical Journal Letters (since 2020), the Astrophysical Journal (since 2018), Advances in Space Research (since 2016), Astronomical Journal (since 2019), Space Weather Journal (since 2019), NASA FLD (2018-2019), SABID (2019), Data in Brief (since 2021), Nature Scientific Data (since 2021)

2019–2021 Session convener, conferences: SHINE 2019, AGU Fall Meetings 2020 & 2021, "Applications of Statistical Methods and Machine Learning in the Space Sciences" 2021