

CURRICULUM VITAE

Dr. Viacheslav M Sadykov

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Physics & Astronomy Department
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1. Education

2015-2019	Ph.D., New Jersey Institute of Technology (NJIT)
2013-2015	Master of Science, Moscow Institute of Physics and Technology (MIPT)
2009-2013	Bachelor of Science, Moscow Institute of Physics and Technology (MIPT)

2. Professional Credentials

2.1. Appointments:

2021-present	Assistant Professor, Physics & Astronomy Dept, Georgia State University
2019-2020	Research Scientist, NASA Ames Research Center (affiliate) / Bay Area Environmental Research Institute
2018-2018	Research Associate, NASA Ames Research Center (affiliate) / Bay Area Environmental Research Institute
2015-2019	Research Assistant, New Jersey Institute of Technology (NJIT)
2015-2017	Teaching Assistant, New Jersey Institute of Technology (NJIT)
2014-2014	Research Assistant, Big Bear Solar Observatory (NJIT)
2010-2015	Laboratory Assistant, Space Research Institute of RAS (SRI of RAS)

2.2. Primary research interests:

- Machine learning-driven forecasting of space weather-related solar transient events and geospace radiation environment
- Development and maintenance of databases and machine learning-ready datasets of solar transient events and in-flight radiation measurements
- Analysis of multiwavelength observations by IRIS, HMI/SDO, BBSO/GST, AIA/SDO, and other space-based / ground-based telescopes, and radiative transfer modeling of the corresponding spectrum and observables
- Development and analysis of the realistic radiative HD/MHD simulations of the quiet Sun and solar flaring atmospheres
- Machine learning-driven analysis of ion-kinetic instabilities in solar wind

3. Scholarship and Professional Development

3.1. External Awards / Projects:

2016-2019	Analysis of Chromospheric Evaporation from the Interface Region Imaging Spectrograph Observations (Graduate Student Fellow, NASA NESSF).
2018-2020	Interactive Database of Atmospheric Radiation Dose Rate (Co-PI, NASA). Award total: \$85,000.00
2020-2023	Intercomparison of 3D MHD Simulations of the Solar Photosphere and Observations: A Case Study in Preparation for the DKIST Era (PI, NSF). Award amount: \$45,073.00
2020-2025	Machine Learning Tools for Predicting Solar Energetic Particle Hazards (Co-PI, NASA Early-Stage Innovation project). Subcontract amount: \$119,039.00
2021-2024	Synergy of Global Modeling and Data Assimilation Analysis to Reconstruct and Forecast Solar Activity (Co-I with no funding, NASA)
2022-present	COFFIES: Consequences Of Fields and Flows in the Interior and Exterior of the Sun (Co-I, GSU lead, NASA DRIVE). Subcontract amount: \$500,000.00
2022-2024	Catalyzing a Grassroots World-Wide Web of Cosmic Ray Detectors for Climate Studies (Co-I, GSU RISE initiative). Award amount: \$250,000.00
2022-2025	Data Discoverability and Machine Learning Readiness for Understanding Space Radiation in Earth Environment (PI, NASA HITS program). Award amount: \$200,489
2023-present	SHINE: Study of Ion Kinetic Instabilities in the Solar Wind Near the Sun (Co-I, GSU lead, NSF SHINE). Subcontract amount: \$73,180.00
2023-2025	Tools for Preparing Machine Learning Ready Multivariate Time Series Datasets (Co-I, NASA MDRAIT, PI Kempton). Award amount: \$199,931.00 (GSU)
2023-present	Extending and Expanding the Multivariate Time Series Dataset for Space Weather Data Analytics (Co-I/Science PI, NASA HARD, PI Kempton). Award amount: \$199,931.00 (GSU)
2023-present	Improving Machine Learning-based Solar Flare Forecasting: The Impacts of Vector Magnetogram Projection Errors, SDO HMI/AIA-based Feature Sets, and Data Volumes (Co-I/Co-Adviser, NASA FINESST student fellowship grant). Award amount: \$150,000.00 (GSU)
2024-2025	Operational and Exploration Requirements and Research Capabilities for SEP Environment Monitoring and Forecasting (PI, NASA TWSC, workshop organization award). Award amount: \$44,328.00.
2024-2026	Study of Ion Velocity Distributions and Kinetic Wave Activity Observed in the Acceleration Region of the Solar Wind with Theory, Modeling, and Machine Learning (Co-I, GSU lead, NASA HTMS). Subcontract amount: \$33,957.00

- 2024-present** Intertwining Physics-Based CME Modeling and Machine Learning for L1 Prediction of Interplanetary Magnetic Field (PI, NASA LWS program). Award amount: \$998,687.00
- 2025-present** Upper-Division Electromagnetism Initiative for Georgia and Beyond (Co-I, GSU PI, Affordable Learning Georgia). Award amount: \$5,950.00 (GSU).
- 2026- present** Resolving Constraints to Inversions from Helioseismic Techniques Using 3D Radiative MHD Simulations (PI/Adviser, NASA FINESST student fellowship grant). Award amount: \$110,993.00
- 2026-present** Development and Validation of an Automated Coronal Mass Ejection Fitting Tool (Co-I, NASA SWR2O2R, PI Singh). Award amount: \$458,641.

3.2. Peer-reviewed publications:

1. Kasapis, S., Hosseinzadeh, P., Whitman, K., ..., Sadykov, V.M., et al. *Review of Machine Learning Models for Solar Energetic Particle Prediction*. 2026, Space Science Reviews, under review.
Accessible at: <https://arxiv.org/abs/2606.19539>
2. Goodwin, G.T., March, A.J., Biradar, J., ..., Sadykov, V.M., Pratt, L. *Improving Solar Flare Soft X-ray Classification With FOXES: A Framework For Operational X-ray Emission Synthesis*. 2026, The Astrophysical Journal, Volume 1003, Issue 1, id.48, 13 pp.
Accessible at: <https://iopscience.iop.org/article/10.3847/1538-4357/ae5e4a>
3. Yogesh, Ofman, L., Klein, K.G., ..., Sadykov, V.M., et al. *Solar Wind Heating near the Sun: A Radial Evolution Approach*. 2026, The Astrophysical Journal, Volume 999, id. 225.
Accessible at: <https://iopscience.iop.org/article/10.3847/1538-4357/ae4582>
4. Sadykov, V.M., Watkins, Z.M., Kempton, D., et al. *Machine Learning-Ready Data Sets for the Analysis and Nowcasting of Atmospheric Radiation at Aviation Altitudes*. 2026, Space Weather, Volume 24, Issue 3, id.e2025SW004551, 18 pp.
Accessible at: <https://agupubs.onlinelibrary.wiley.com/doi/10.1029/2025SW004551>
5. Syeda, R., Kempton, D., Sadykov, V.M., Kitiashvili, I., Angryk, R. *Developing Machine Learning Models of Subgrid Turbulent Transport for Quiet Sun 3D Radiative Hydrodynamic Simulations*. 2026, The Astrophysical Journal Supplement Series, accepted for publication.
Accessible at: <https://iopscience.iop.org/article/10.3847/1538-4365/ae78cf>
6. Ali, A., Sadykov, V.M. *Comparative Analysis of 10 - 50 MeV Solar Proton Events at Lagrange Point 1 and the Geostationary Orbit*. 2026, Journal of Geophysical Research - Space Physics, in press.
Accessible at: <https://agupubs.onlinelibrary.wiley.com/doi/10.1029/2025JA034853>
7. Syeda, R., Kempton, D., Sadykov, V.M., Kitiashvili, I., Angryk, R. *Cluster-Weighted Training of Deep Surrogate Models for Subgrid Turbulent Transport*. 2025, SABID, 2025 IEEE International Conference on Data Mining Workshops (ICDMW).
Accessible at: <https://ieeexplore.ieee.org/document/11415926>
8. Mubashir, A., Ashok, A., Connors, M., ..., Sadykov, V.M., et al. *Time lag analysis of the space weather effects on muon and neutron flux at different geomagnetic cutoff rigidities*. 2025, Advances in Space Research, Volume 76, Issue 12, pp. 7587-7599.

Accessible at:

<https://www.sciencedirect.com/science/article/pii/S0273117725003680?via%3Dihub>

9. K C, Sanjib, Sadykov, V.M., Kempton, D. *Nowcasting of Aviation Radiation Using Geospace Environment Properties: A Machine Learning Approach*. 2025, SABID, 2025 IEEE International Conference on Data Mining Workshops (ICDMW).
Accessible at: <https://ieeexplore.ieee.org/document/11415921>
10. Ali, A., Sadykov, V.M. *Using ML-based Regression Techniques to Mitigate GOES Energetic Proton Flux Data Contamination and Magnetospheric Effects*. SABID, 2025 IEEE International Conference on Data Mining Workshops (ICDMW).
Accessible at: <https://ieeexplore.ieee.org/document/11415910>
11. Sadykov, V.M., Ofman, L., Boardsen, S.A., et al. *Identification of Ion-kinetic Instabilities in Hybrid-PIC Simulations of Solar Wind Plasma with Machine Learning*. 2025, The Astrophysical Journal Supplement Series, Volume 279, Issue 1.
Accessible at: <https://iopscience.iop.org/article/10.3847/1538-4365/addd07>
12. Granovsky, S., Kosovichev, A.G., Sadykov, V.M., Kerr, G.S., Allred, J.C. *Strong Photospheric Heating Indicated by Fe I 6173 Å Line Emission during White-light Solar Flares*. 2025, The Astrophysical Journal, Volume 988, Issue 1, id.74.
Accessible at: <https://iopscience.iop.org/article/10.3847/1538-4357/addd1e>
13. Yogesh, Ofman, L., Boardsen, S.A., Klein, K., Martinovic, M., Sadykov, V.M. et al. *Evidence of Interaction between Ion-scale Waves and Ion Velocity Distributions in the Solar Wind*. 2025, The Astrophysical Journal, Volume 986, Issue 2, id.119.
Accessible at: <https://iopscience.iop.org/article/10.3847/1538-4357/add467>
14. Sadykov, V.M., Martens, P., Kempton, D., et al. *Operational and Exploration Requirements and Research Capabilities for SEP Environment Monitoring and Forecasting*. 2025, Proceedings of the 54th International Conference on Environmental Systems, 13-17 July 2025, Prague, Czech Republic.
Accessible at: <https://ices.space/conference-proceedings/>
15. Ofman, L., Yogesh, Boardsen, S.A., Mostafavi, P., Jian, L.K., Sadykov, V.M., Klein, K., Martinovic, M. *Modeling Hot, Anisotropic Ion Beams in the Solar Wind Motivated by the Parker Solar Probe Observations near Perihelia*. 2025, The Astrophysical Journal, Volume 984, id. 174.
Accessible at: <https://iopscience.iop.org/article/10.3847/1538-4357/adc812>
16. Wen, J., Ahmadzadeh, A., Georgoulis, M.K., Sadykov, V.M., Angryk, R.A. *Outlier Detection and Removal in Multivariate Time Series for a More Robust Machine Learning-Based Solar Flare Prediction*. 2025, The Astrophysical Journal Supplement Series, Volume 277, Issue 2, id.60.
Accessible at: <https://iopscience.iop.org/article/10.3847/1538-4365/ad9e3>
17. Goodwin, G.T., Sadykov, V.M., Martens, P.C. *The Impacts of Magnetogram Projection Effects on Solar Flare Forecasting*. 2025, The Astrophysical Journal, Volume 981, Issue 2, id.200.
Accessible at: <https://iopscience.iop.org/article/10.3847/1538-4357/ad6f6>
18. Kasapis, S., Kitiashvili, I.N., Kosovich, P., Kosovichev, A.G., Sadykov, V.M., O’Keefe, P., Wang, V. *Forecasting Solar Energetic Particle Events During Solar Cycles 23 and 24 Using Interpretable Machine Learning*. 2024, The Astrophysical Journal, Volume 974, Issue 1, id.131, 13 pp.
Accessible at: <https://iopscience.iop.org/article/10.3847/1538-4357/ad6f0e>

19. Kosovich, P., Sadykov, V.M., Kosovichev, A.G., et al. *Time Series of Magnetic Field Parameters of Merged MDI and HMI Space-Weather Active Region Patches as Potential Tool for Solar Flare Forecasting*. 2024, The Astrophysical Journal, Volume 972, Issue 2, id.169, 10 pp.
Accessible at: <https://iopscience.iop.org/article/10.3847/1538-4357/ad60c3>
20. Goodwin, G.T., Sadykov, V.M., Martens, P.C. *Investigating Performance Trends of Simulated Real-time Solar Flare Predictions: The Impacts of Training Windows, Data Volumes, and the Solar Cycle*. 2024, The Astrophysical Journal, Volume 964, Issue 2, id.163, 17 pp.
Accessible at: <https://iopscience.iop.org/article/10.3847/1538-4357/ad276c#sidr-main>
21. Georgoulis, M.K., Yardley, S.L., Guerra, J.A., ..., Sadykov, V.M., et al. *Prediction of Solar Eruptive Events Impacting Space Weather Conditions*. 2023, AdSpR, in press.
Accessible at: <https://www.sciencedirect.com/science/article/pii/S027311772400173X>
22. Masson, A., Fung, S.F., Camporeale, E., ..., Sadykov, V.M., et al. *Heliophysics and space weather information architecture and innovative solutions: ways forward*. 2024, Advances in Space Research, in press.
Accessible at: <https://www.sciencedirect.com/science/article/pii/S0273117724004939>
23. Kosovichev, A.G. and Sadykov, V.M. *Subsurface Flows Associated with Formation and Flaring Activity of Solar Active Regions*. 2024, Proceedings of the International Astronomical Union.
Accessible at: <https://www.cambridge.org/core/journals/proceedings-of-the-international-astronomical-union/article/subsurface-flows-associated-with-formation-and-flaring-activity-of-solar-active-regions/218268AF63AAE0EE4002D0176A3AB5BB>
24. O'Keefe, P.M., Sadykov, V.M., Kosovichev, A.G., et al. *The Random Hivemind: An Ensemble Deep Learner. A Case Study of Application to Solar Energetic Particle Prediction Problem*. 2024. Advances in Space Research, Volume 74, Issue 12, pp. 6252-6263. Accessible at:
<https://www.sciencedirect.com/science/article/pii/S0273117724003934?via%3Dihub>
25. Sadykov, V.M., Stefan, J.T., Kosovichev, A.G., et al. *Can Proton Beam Heating Flare Models Explain Sunquakes?* 2023, ApJ, 960, 80S.
Accessible at: <https://iopscience.iop.org/article/10.3847/1538-4357/ad0cf3>
26. Ali, A., Sadykov, V.M., Kosovichev, A.G., et al. *Predicting Solar Proton Events of Solar Cycles 22-24 using GOES Proton & soft X-Ray flux features*. 2024, ApJSS, 270, 15A.
Accessible at: <https://iopscience.iop.org/article/10.3847/1538-4365/ad0a6c>
27. Mubashir, A., Ashok, A., Bourgeois, A.G., ..., Sadykov, V.M., et al. *Muon Flux Variations Measured by Low-Cost Portable Cosmic Ray Detectors and Their Correlation With Space Weather Activity*. 2023, JGRA, 12831943M.
Accessible at: <https://agupubs.onlinelibrary.wiley.com/doi/10.1029/2023JA031943>
28. Kosovichev, A.G., Sadykov, V.M., Stefan, J.T. *Spectro-polarimetric Properties of Sunquake Sources in X1.5 Flare and Evidence for Electron and Proton Beam Impacts*. 2023, ApJ, 958, 160K
Accessible at: <https://iopscience.iop.org/article/10.3847/1538-4357/acf9eb>
29. Marroquin, R.D., Sadykov, V.M., Kosovichev, A.G., et al. *Statistical Study of the Correlation between Solar Energetic Particles and Properties of Active Regions*. 2023, ApJ, 952, 97M.
Accessible at: <https://iopscience.iop.org/article/10.3847/1538-4357/acdb65>

30. Polito, V., Kerr, G.S., Xu, Y., Sadykov, V.M., Lorincik, J. *Solar Flare Ribbon Fronts I: Constraining flare energy deposition with IRIS spectroscopy*. 2023, ApJ, 944, 104P.
Accessible at: <https://iopscience.iop.org/article/10.3847/1538-4357/acaf7c>
31. Kitiashvili, I.N., Kosovichev, A.G., Wray, A.A., Sadykov, V.M., and Guerrero, G. *Leptocline as a Shallow Substructure of Near-Surface Shear Layer in 3D Radiative Hydrodynamic Simulations*. 2022, MNRAS, 518, pp. 504-512.
Accessible at: <https://doi.org/10.1093/mnras/stac2946>
32. Whitman, K., Egeland, R., Richardson, I.G., ..., Sadykov, V.M., et al. *Review of solar energetic particle models*. 2023, AdSpR, 72, 5161W.
Accessible at: <https://doi.org/10.1016/j.asr.2022.08.006>
33. Xu, Y., Yang, X., Kerr, G.S., ..., Sadykov, V.M., et al. *Multi-Passband Observations of a Solar Flare over the He I 10830 Å line*. 2022, ApJL, 924, L18.
Accessible at: <https://iopscience.iop.org/article/10.3847/2041-8213/ac447c>
34. Yeolekar, A., Patel, S., Talla, S., ..., Sadykov, V.M., et al. *Feature Selection on a Flare Forecasting Testbed: A Comparative Study of 24 Methods*. 2021, Systematic Feature Engineering for Time-Series Data Mining (SFE-TSDM) workshop paper.
Accessible at: <https://doi.ieeecomputersociety.org/10.1109/ICDMW53433.2021.00138>
35. Kerr, G.S., Xu, Y., Allred, J.C., ..., Sadykov, V.M., et al. *He I 10830 Å Dimming during Solar Flares. I. The Crucial Role of Nonthermal Collisional Ionizations*. 2021, The Astrophysical Journal, 912, 153.
Accessible at: <https://iopscience.iop.org/article/10.3847/1538-4357/abf42d>
36. Sadykov, V.M., Kitiashvili, I.N., Sainz Dalda, A. et al. *Compression of Solar Spectroscopic Observations: a Case Study of Mg II k Spectral Line Profiles Observed by NASA's IRIS Satellite*. 2021b, Content-Based Multimedia Indexing (CBMI) 2021 workshop paper.
Accessible at: <https://ieeexplore.ieee.org/document/9461879>
37. Sadykov, V.M., Kitiashvili, I.N., Kosovichev, A.G., Wray, A.A. *Connecting Atmospheric Properties and Synthetic Emission of Shock Waves Using 3D RMHD Simulations of Quiet Sun*. 2021c, ApJ, 909, 35.
Accessible at: <https://iopscience.iop.org/article/10.3847/1538-4357/abd9c7>
38. Sadykov, V.M., Kitiashvili, I.N., Tobiska, W.K., Guhathakurta, M. Sadykov et al. *Radiation Data Portal: Integration of Radiation Measurements at the Aviation Altitudes and Solar-Terrestrial Environment Observations*. 2021d, Space Weather, 19, e02653
Accessible at: <https://agupubs.onlinelibrary.wiley.com/doi/10.1029/2020SW002653>
39. Huang, N., Sadykov, V.M., Xu, Y., Jing, J., Wang, H. *Comparison of Enhanced Absorption in He I 10830 Å in Observations and Modeling during the Early Phase of a Solar Flare*. 2020, ApJL, 897, L6.
Accessible at: <https://iopscience.iop.org/article/10.3847/2041-8213/ab9b7a>
40. Sadykov, V.M., Kosovichev, A.G., Kitiashvili, I.N., Kerr, G.S. *Response of SDO/HMI observables to heating of the solar atmosphere by precipitating high-energy electrons*. 2020, ApJ 893, article id. 24. 10 pp.
Accessible at: <https://iopscience.iop.org/article/10.3847/1538-4357/ab7b6a>
41. Sadykov V.M., Kosovichev A.G., Kitiashvili I.N., Frolov A. *Statistical Properties of Soft X-Ray Emission of Solar Flares*. 2019a, ApJ 874, article id. 19, 11 pp.
Accessible at: <https://iopscience.iop.org/article/10.3847/1538-4357/ab06c3>

42. Sadykov V.M., Kosovichev A.G., Sharykin I.N., Kerr G.S. *Statistical Study of Chromospheric Evaporation in Impulsive Phase of Solar Flares*. 2019b, ApJ 871, article id. 2, 13 pp.
Accessible at: <https://iopscience.iop.org/article/10.3847/1538-4357/aaf6b0>
43. Huang, N., Xu, Y., Sadykov, V.M., Jing, J., Wang, H. *Spectral Diagnosis of Mg II and H α Lines during the Initial Stage of an M6.5 Solar Flare*. 2019, ApJL 878, article id. L15, 7 pp.
Accessible at: <https://iopscience.iop.org/article/10.3847/2041-8213/ab9b7a>
44. Sadykov V.M., Kosovichev A.G. *Relationships between Characteristics of the Line-of-sight Magnetic Field and Solar Flare Forecasts*. 2017, ApJ, Volume 849, Issue 2, article id. 148, 9 pp.
Accessible at: <https://iopscience.iop.org/article/10.3847/1538-4357/aa9119>
45. Sadykov V.M., Kosovichev A.G., Oria V., Nita G.M. *An Interactive Multi-Instrument Database of Solar Flares*. 2017, ApJS 231, Issue 1, article id. 6, 8 pp.
Accessible at: <https://iopscience.iop.org/article/10.3847/1538-4365/aa79a9>
46. Sharykin I.N., Kosovichev A.G., Sadykov V.M., Zimovets, I.V., Myshyakov, I.I. *Investigation of Relationship between High-energy X-Ray Sources and Photospheric and Helioseismic Impacts of X1.8 Solar Flare of 2012 October 23*. 2017a, ApJ 843, 67, 8 pp.
Accessible at: <https://iopscience.iop.org/article/10.3847/1538-4357/aa77f1>
47. Sharykin I.N., Sadykov V.M., Kosovichev A.G., Vargas-Dominguez S., Zimovets I.V. *Flare Energy Release in the Lower Solar Atmosphere near the Magnetic Field Polarity Inversion Line*. 2017b, ApJ 840, article id. 84, 13 pp.
Accessible at: <https://iopscience.iop.org/article/10.3847/1538-4357/aa6dfd>
48. Sadykov V.M., Kosovichev A.G., Sharykin I.N., Zimovets I., Vargas Dominguez S. *Relationship Between Chromospheric Evaporation and Magnetic Field Topology in an M-Class Solar Flare*. 2016, ApJ 828, article id. 4, 9 pp.
Accessible at: <https://iopscience.iop.org/article/10.3847/0004-637X/828/1/4>
49. Sadykov V.M., Vargas Dominguez S., Kosovichev A.G., Sharykin I.N., Struminsky A.B., Zimovets I. *Properties of Chromospheric Evaporation and Plasma Dynamics of a Solar Flare from IRIS observations*. 2015, ApJ 805, article id. 67, 15 pp.
Accessible at: <https://iopscience.iop.org/article/10.1088/0004-637X/805/2/167>
50. Zimovets I.V., Sadykov V.M. *Spatially resolved observations of a coronal type II radio burst with multiple lanes*. 2015, AdSpR 56, 12, p.2811-2832.
Accessible at: <https://doi.org/10.1016/j.asr.2015.01.041>
51. Eselevich V.G., Eselevich M.V., Sadykov V.M., Zimovets I.V. *Evidence of a blast shock wave formation in a “CME–streamer” interaction*. 2015, AdSpR 56, 12, p.2793-2803.
Accessible at: <https://doi.org/10.1016/j.asr.2015.03.041>
52. Sadykov, V.M., Zimovets, I.V., *A Green’s Function Method for Calculating the Potential Magnetic Field in Solar Active Regions in a Spherical Geometry*. 2014, Astron. Rep., Vol. 58, No. 5, pp. 345–352.
Accessible at: <https://link.springer.com/article/10.1134%2FS1063772914050059>

3.3. Other significant publications:

53. Kempton, D., Goodwin, G., Thippareddy, T.K.R., Gupta, R., Sadykov, V., Angryk, R. *Describing the swdatatoolkit: A Space Weather Data Analysis Library*. 2026, eprint arXiv:2604.22741.

- Accessible at: <https://arxiv.org/abs/2604.22741>
54. Verniero, J.L., Juno, J., Sadykov, V.M. et al. *Guiding Heliophysics Toward an Enhanced Transdisciplinary Framework*. 2022, Heliophysics Decadal Survey 2022 White Paper. Accessible at: <https://baas.aas.org/pub/2023n3i415/release/1>
 55. Hess Weber, S., Mahajan, S.S., Koufos, A., ..., Sadykov, V.M., et al. *You Get What You Pay for: Scientific Engineering Challenges for Successful Distributed Multi-Satellite Missions in Solar and Heliophysics*. 2022, Heliophysics Decadal Survey 2022 White Paper. Accessible at: <https://baas.aas.org/pub/2023n3i168/release/1>
 56. Nita, G., Ahmadzadeh, A., Criscuoli, S., ..., Sadykov, V.M., et al. *Revisiting the Solar Research Cyberinfrastructure Needs: A White Paper of Findings and Recommendations*. 2022, eprint arXiv:2203.09544. Accessible at: <https://arxiv.org/abs/2203.09544>
 57. Sadykov, V.M., Kosovichev, A.G., Kitiashvili, I.N. et al. Prediction of Solar Proton Events with Machine Learning: Comparison with Operational Forecasts and “All-Clear” Perspectives. 2021, ArXiv E-prints. Accessible at: <https://arxiv.org/abs/2107.03911>
 58. Criscuoli, S., Kazachenko, M., Kitiashvili, I., ..., Sadykov, V.M., et al. *Challenges and Advances in Modeling of the Solar Atmosphere: A White Paper of Findings and Recommendations*. 2020, eprint arXiv:2101.00011 Accessible at: <https://arxiv.org/abs/2101.00011>
 59. Nita, G.M., Georgoulis, M., Kitiashvili, I.N., Sadykov, V.M., et al. *Machine Learning in Heliophysics and Space Weather Forecasting: A White Paper of Findings and Recommendations*. 2020, eprint arXiv:2006.12224 Accessible at: <https://arxiv.org/abs/2006.12224>
 60. Sadykov V.M. *Multi-wavelength Investigation of Energy Release and Chromospheric Evaporation in Solar Flares*. 2019, Ph.D. Dissertation, New Jersey Institute of Technology. Advisor: Dr. Kosovichev A.G. Accessible at: <https://www.proquest.com/docview/2271926976>
 61. Sadykov V.M. *Investigation of Plasma Dynamics in a Solar Flare from IRIS Observations and Modeling of Chromospheric Spectral Lines*. 2015, Master Thesis, Moscow Institute of Physics and Technology. Advisor: Dr. Zimovets I.V.
 62. Sadykov, V.M. and Kosovichev, A.G. *Using MHD simulations to model H-alpha and UV spectral lines for interpretation of IRIS and NST data*. 2014. eprint arXiv:1412.0288. Accessible at: <https://arxiv.org/abs/1412.0288>
 63. Sadykov V.M. *Investigation of Applicability of Potential Field Approximation for Reconstruction of Magnetic Fields in Solar Active Regions*. 2013, Bachelor Thesis, MIPT. Advisor: Dr. Zimovets I.V.

3.4. Other significant products:

1. Kempton, D., Sadykov, V.M., Kitiashvili, I.N. Updated Radiation Data Portal. 2025. The web-accessible database for the search and visualization of the Automated Radiation Measurements for Aerospace Safety (ARMAS) experiment data. Accessed on 05/09/2026 at <https://dmlab.cs.gsu.edu/rdp/>
2. Sadykov, V.M., Ofman, L., Boardsen, S., Yogesh. “kineticsim_reader: A set of routines for hybrid kinetic simulations.” Public Github repository containing the Python library

for reading and processing Hybrid PIC simulations and machine learning identification of instabilities. URL: https://github.com/vsadykov/kineticsim_reader. Last accessed: March 10, 2026.

3. O’Keefe, P., Sadykov, V.M., Kosovichev, A.G. et al. Handling Highly Imbalanced Data in Machine Learning Applications. 2022, Jupyter Notebook presented at EarthCube 2022 conference, Zenodo.
Accessible at: <https://zenodo.org/record/6780972#.Y17DgXbMIuU>
4. 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 01/11/2022 at <https://data.nas.nasa.gov/helio/portals/rdp/>
5. 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 Heliportal. Accessed on 01/11/2022 at <https://data.nas.nasa.gov/helio/portals/solarflares/>

3.5. Selection of Recent Conference Talks and Seminars:

More than 100 oral/poster presentations, talks, and seminars were given/scheduled in 2021-2026. As an example, in the most recent AGU Fall Meeting 2025 (December 15-19, 2025), 13 poster talks and 1 oral talk were authored or co-authored, with 7 of them being presented by GSU students as first authors (6 Physics & Astronomy PhD students, 1 post-baccalaureate research assistant, 1 Computer Science PhD student). Below are some selected recent conference talks and seminars:

1. Sadykov, V.M., and gLOWCOST collaboration. *In-Flight Cosmic-Ray Muon Measurements with a CubeSat-Size Detector Prototype*. NASA Heliophysics Technology Symposium, August 31 – September 4, 2026, JHU APL, Laurel, MD.
2. Sadykov, V.M., and LWS project team. *Intertwining Physics-Based CME Modeling and Machine Learning for L1 Prediction of Interplanetary Magnetic Field*. 46th COSPAR Scientific Assembly, August 1-9, 2026, Florence, Italy
3. Sadykov, V.M., Ofman, L., Yogesh, et al. *Identification of Ion-Kinetic Instabilities in Solar Wind Plasma with Machine Learning: from Hybrid-PIC Simulations to Observational Data*. 46th COSPAR Scientific Assembly, August 1-9, 2026, Florence, Italy
4. Goodwin, G.T., March, A.J., Biradar, J., ..., Sadykov, V.M., Pratt, L. *Improving Solar Flare Soft X-ray Classification With FOXES: A Framework For Operational X-ray Emission Synthesis*. 2026, Space Weather Workshop, April 27 – May 1, Boulder, CO.
5. Ali, A., Sadykov, V.M., Aydin, B., Mervyn, B. *Improving Short-Term Proton Event Forecasting with Electron-Based Inputs and Transformer Architectures*. 2026, Space Weather Workshop, April 27 – May 1, Boulder, CO.
6. K.C., S., Sadykov, V.M., Kempton, D., He, X., Mudiyansele, E.H., Hettiarachchi, T. *Radiation Exposure at Aviation Altitudes: Machine Learning Analysis and Cosmic Ray Muon Measurements*. 2026, Space Weather Workshop, April 27 – May 1, Boulder, CO.

7. **[public lecture]** Sadykov, V.M. *How's the Weather in Space? Exploring Solar Physics and Space Weather — and How AI Helps Us Understand the Sun*. 2025, Cosmic Conversations Series, December 4, 2025, Fernbank Science Center (Planetarium).
8. Turner, R., Sadykov, V.M., SEP workshop SOC and LOC committee members. *Operational and Exploration Requirements and Research Capabilities for SEP Environment Monitoring and Forecasting*. 54th International Conference on Environmental Systems, Session #503, Paper ICES-2025-283, 13-17 July 2025, Prague, Czech Republic.
9. **[invited]** Sadykov, V.M. *Machine Learning in Heliophysics: A Subjective Perspective on the Current Landscape and Ways Forward*. University of Michigan CLaSP Seminar Series, 01/16/2025, Ann Arbor, MI.
10. Sadykov, V.M. *How Do We Understand the Sun and Its Effects on the Earth? Research in the domains of Solar Physics, Space Weather, and Machine Learning*. Modern Physics Class Lecture, Physics & Astronomy Department, GSU, 04/15/2025.
11. Sadykov, V.M. and GSU DMLab Team. *Machine Learning for Space Weather: Overview of Research Efforts at Georgia State University*. 2025, Space Weather Workshop, Boulder, CO, March 17-25, 2025.
12. Ali, A., Sadykov, V.M. *Comparative Analysis of Solar Proton Events at Lagrange Point-1 and the Geostationary Orbit*. 2025, NSF Solar Heliospheric and INTERplanetary Environment (SHINE) workshop, Charleston, SC, June 23-27, 2025.
13. Goodwin, G.T., Kempton, D., Gupta, R., Sadykov, V.M., Martens, P.C. *An Extreme Ultraviolet Extension to the SWAN-SF Flare Forecasting Dataset*. 2025, NSF Solar Heliospheric and INTERplanetary Environment (SHINE) workshop, Charleston, SC, June 23-27, 2025.
14. Asante, I., Sadykov, V.M., Kitiashvili, I.N. *Comparing Photospheric Oscillation Power Spectra for Three Different Doppler Shift Estimation Methods*. 2025, NSF Solar Heliospheric and INTERplanetary Environment (SHINE) workshop, Charleston, SC, June 23-27, 2025.
15. Hamilton, J., Sadykov, V.M., Kitiashvili, I.N., Wray, A.A. *Diagnostics of Propagating Acoustic Waves from Realistic Radiative Hydrodynamic Simulations*. 2025, NSF Solar Heliospheric and INTERplanetary Environment (SHINE) workshop, Charleston, SC, June 23-27, 2025.
16. Syeda, R.H., Kempton, D., Sadykov, V.M., Kitiashvili, I.N. *Cluster-Weighted Surrogate Modeling of Subgrid Turbulent Transport based on 3D Radiative Hydrodynamic Simulations of the Quiet Sun*. 2025, NSF Solar Heliospheric and INTERplanetary Environment (SHINE) workshop, Charleston, SC, June 23-27, 2025.
17. Saba, T., Sadykov, V.M., Goodwin, G.T., Martens, P.C. *Investigating the Role of Flare Ribbon and 3D Magnetic Field Topology in Flare Eruptivity*. 2025, NSF Solar Heliospheric and INTERplanetary Environment (SHINE) workshop, Charleston, SC, June 23-27, 2025.
18. **[invited]** Sadykov, V.M. “Monitoring and Prediction of Solar Transient Events and Space Radiation Environment with Machine Learning”. Colloquium talk at Georgia Southern University, April 22, 2024.
19. **[invited]** Sadykov, V.M. “How's the Weather in Space? Exploring Solar Physics and Space Weather through Machine Learning”. Keynote talk at Georgia Regional Astronomy Meeting, November 1-2, 2024, Georgia State University – Perimeter College.

20. **[invited]** Sadykov, V.M. “*Machine Learning in Heliophysics: Capturing the Current Picture [subjective view]*”, invited talk at 1st FTTP Annual International AL Plasma Physics Conference (AIAPC), 10/28/2028, Huntsville, AL.
21. **[invited]** Sadykov, V.M., GSU gLOWCOST Team, NASA RDP Team. “*In-Flight Cosmic Ray Muon Measurements at GSU and Radiation Data Portal*”. Coordinated Cosmic Ray Observation System Conference (CCROS), October 14-16, 2024, Lincoln, NE
22. Burns-Kaurin, E., Sadykov, V., Goodwin, G., Ali, A. et al. “*Multi-Instrument Analysis of the May 2024 Solar Particle Storms*”. AGU Fall Meeting 2024, December 9-13, Washington DC.
23. **[invited]** Sadykov, V.M. “*Machine Learning-Ready Data Sets in Heliophysics*”. 2023, International Heliophysics Data Environment Alliance meeting, invited talk followed by a topical discussion.
24. Watkins, Z., Jones, W., Sadykov, V.M., et al. “*Enhancing Data Discoverability and Analysis for Understanding Space Radiation in Earth Environment with Radiation Data Portal*”. 2023, SHINE Conference 2023, Poster presentation.
25. Asante, I., and Sadykov, V.M. “*Modeling of SDO/HMI Line-Of-Sight Observables and Their Dependence on Spacecraft Radial Velocity for 3D Radiative MHD Simulations of the Sun*”. 2023, National Society of Black Physicists Annual Meeting, Poster presentation
26. Sadykov, V.M., Kitiashvili, I.N., Wray, A.A., et al. “*Modeling Spectral Lines and Broadband Emission for Realistic Simulations of the Sun*”. 2023, ASTRONUM conference, oral talk (by invitation).
27. Sadykov, V.M. and ESI team. “*Prediction of Solar Proton Events with Machine Learning*”. 2023, Space Radiation Analysis Group (SRAG) Seminar, Johnson Space Center, NASA, seminar.
28. Sadykov, V.M., Stefan, J.T., Kosovichev, A.G. et al. “*Can Proton Beam Heating Flare Models Explain Sunquakes?*” 2023, Solar Physics High Energy Research (SPHERE) Workshop, oral talk.
29. Sadykov, V.M., Kitiashvili, I.N., Wray, A.A. et al. “*Physical Properties of the Solar Atmosphere Derived from Comparison of Spectro-Polarimetric SDO/HMI Observables with 3D Radiative MHD Simulations*”. 2023, International Astronomical Union (IAU) Symposium 365, oral talk, presented online.
30. Sadykov, V.M. “*All-Clear Prediction of Solar Energetic Particle Events with Machine Learning*”. 2022, NASA Advanced Modeling & Simulation (AMS) Seminar Series, NASA Ames Research Center (presented online)
Recording accessible at: <https://www.nas.nasa.gov/pubs/ams/2022/11-01-22.html>
31. Sadykov, V.M., Kitiashvili, I., Ali, A. et al. “*Exploring Radiation Data Portal (RDP)*”. 2022, 2-hour oral tutorial presented at US-India Space Radiation Workshop.
32. **[invited]** Sadykov, V.M. *New Frontiers in Prediction of Solar Transient Events with Machine Learning*. 2022, COSPAR 2022 44th Scientific Assembly, invited talk.

4. Teaching and Student Success

4.1. GSU Undergraduate-level and Graduate-level courses taught:

The note “N sections” refers to the number of groups of students (typically, of the size of 24 or less) participating in the class activity. Up to five sections can be typically combined into a single lecture/class activity.

- Spring 2021. PHYS2211K. “Principles of Physics 1”, 4 sections (one class), online
- Fall 2021. ASTR1010. “Astronomy of the Solar System”, 3 sections (one class), in-person
- Fall 2021. PHYS4700. “Electricity and Magnetism”, 1 section (one class), in-person
- Spring 2022. ASTR8710. “Cosmic Electrodynamics”, 1 section (independent study)
- Fall 2022. ASTR8140/PHYS8140. “Introduction to Solar Physics and Space Weather”, 1 section (one class), in-person
- Fall 2022. PHYS4700. “Electricity and Magnetism”, 1 section (one class), in-person
- Fall 2023. PHYS4700. “Electricity and Magnetism”, 1 section (one class), in-person
- Spring 2024. ASTR1010. “Astronomy of the Solar System”, 3 sections (one class), in-person.
- Fall 2024. PHYS4700. “Electricity and Magnetism”, 1 section (one class), in-person
- Fall 2024. ASTR8140/PHYS8140. “Introduction to Solar Physics and Space Weather”, 1 section (one class), in-person
- Fall 2025. PHYS4700. “Electricity and Magnetism”, 1 section (one class), in-person
- Spring 2026. PHYS2212K. “Principles of Physics 1”, 3 sections (one class), in-person
- Spring 2026. ASTR1010K. “Astronomy of the Solar System”. 5+5 sections (two separate classes), online
- Fall 2026 (ongoing). ASTR8140/PHYS8140. “Introduction to Solar Physics and Space Weather”, 1 section (one class), in-person. A record number of 18 students!
- Fall 2026. PHYS4700. “Electricity and Magnetism”, 1 section (one class), in-person

4.2. GSU Graduate-level courses and extracurricular activities developed:

- ASTR8710 “Cosmic Electrodynamics” graduate-level independent study course. This course was taught in Spring 2022.
Course description: The course introduces the basics of the graduate-level electrodynamics and covers various topics, including electrostatics, steady currents, magnetic fields, magnetic induction, Maxwell’s equations, electromagnetic wave propagation, electromagnetic energy, and radiation. In addition, this course covers the selected topics of the astrophysics applications, including mechanisms of particle acceleration, particle drifts in inhomogeneous magnetic fields, and typical mechanisms of particle radiation which are used for diagnostics of the solar plasma (bremsstrahlung, gyrosynchrotron radiation, etc).
- ASTR8140 “Introduction to Solar Physics and Space Weather” graduate-level course developed in collaboration with Dr. Martens, Dr. Pratt, and Dr. Jefferies. The course was taught in Fall 2022 and every other year after.
Course description: The course introduces the key areas of modern solar physics and space weather. The physical processes that take place in the solar interior, solar atmosphere, and heliosphere, are considered separately and in conjunction. Particular attention is given to solar transient events and their interaction with the magnetosphere and terrestrial environment. The course also highlights the state-of-art observational capabilities in heliophysics.

- Extracurricular activity “Machine learning hands-on sessions”. The series of seven sessions provided hands-on experience with machine learning in application to physics and astronomy problems for interested students and faculty. The series have been offered to the students in 2023, and the materials are periodically reutilized for the students who wish to have training in machine learning.

4.3. Advising Students:

- Six GSU graduate students are advised (co-advised) during 2021-2026, five passed the PhD prospectus talk stage, two on track for graduation in 2026:
 - Aatiya Ali, *Prediction of Solar Energetic Particle Events*, graduating in 2026
 - Isaac Asante, *Modeling of SDO/HMI Observables and Their Dependence on Spacecraft Radial Velocity for 3D Radiative MHD Simulations of the Sun*, graduating in 2027
 - Jessica Hamilton, *Diagnostics of Wave Propagation in the Lower Solar Atmosphere through Correlation of Spectral Line Dynamics and Physical Characteristics*, graduating in 2027
 - Griffin Goodwin (co-advising), *Exploring performance trends of simulated real-time solar flare predictions*, graduating in 2026
 - Tamima Saba, *Investigation relations between eruptivity of the solar flares and their flare ribbon topology*, graduating in 2027
 - Sanjib K C, *Enhancing Radiation Predictability: A Data-Driven Approach Using Multi-Source Observations and Machine Learning*, graduating in 2028
- Sixteen undergraduate students are advised (co-advised) during 2021-2026:
 - Dorsa Erfani, *Brightness contribution of unresolved magnetic elements*
 - Russell Marroquin, *Prediction of Solar Energetic Particle Events*
 - Ryan Parkhill, *Non-equilibrium ionization processes in shocks*
 - Zachary Watkins, *Statistical study of radiation measurements in ARMAS flights*
 - William Jones, *investigating correlations between muon monitor measurements and radiosonde measurements*
 - Marcus Huggins, *Comparison of the direct integration and optimization techniques for NLFFF extrapolations in active regions*
 - Zachary Fishman, *Python library for ML-aided spectroscopic data compression and analysis*
 - Yasmeen Shah, *Comparison solar energetic particle environments at the geostationary orbit and L1 point*
 - Emily Burns-Kaurin, *Multi-Instrument Analysis of the May 2024 Solar Particle Storms*
 - Alexander Lomashvili, *Implementation of Physics-Informed Neural Networks for Non-Linear Force-Free Magnetic Field Extrapolations in Solar Active Regions*
 - Aarush Darpally, *Modeling Solar Continuum Intensity Using Machine Learning*.
 - Nathan Borchers, *Using Solar Far-Side Helioseismology Time Delay Maps for Front-Side Active Region Prediction*.
 - Jack McGuire, *Analysis of Forbush Decrease Events in gLOWCOST muon detector observations*.

- Ramishaa Mehr, *Using Solar Far-Side Helioseismology Time Delay Maps for Front-Side Active Region Prediction (part 2)*.
- Kyne Ngyuen, *Analysis of Forbush Decrease Events in gLOWCOST muon detector observations (part 2)*.
- Debosmita Mallick, *Short-term and long-term prediction of CME arrival times using large CME simulation datasets*.
- David Shatto, *Statistical analysis and machine learning-driven modeling of in-flight radiation measurements*.
- Two REU students are advised during the Summer 2022&2024 REU program at GSU.
 - Logan White, *Cross-Calibration of Magnetic Field Measurements of Solar Active Regions by SOHO/MDI and SDO/HMI Instruments, 2022*.
 - Abhineet Srivastava, *Free energy and magnetic helicity budgets of solar active regions and their association with solar flares, 2024 (in progress)*.

5. Service

5.1. Service to the Department:

- **[active]** Colloquium Committee Member (Fall 2025 – now), Colloquium Committee co-chair (Fall 2022 – Spring 2025)
- **[active]** Executive Committee elected member (Fall 2024 – now)
- **[active]** Astronomy Peer Advising Leaders (AstroPAL) Faculty Advisor (Fall 2022 – now)
- **[active]** PhD Committee lead, Isaac Asante’s PhD Committee, Title: “Validation of Doppler Shift Estimation Methods and Helioseismic Techniques for Inversions of Solar Sub-Surface Flows using 3D RMHD simulations”. Prospectus talk presented in July 2026.
- **[active]** PhD Committee lead, Jessica Hamilton’s PhD Committee, Title: “Building Diagnostics of Propagating Acoustic Waves in the Lower Solar Atmosphere”. Prospectus talk presented in May 2025.
- **[active]** PhD Committee lead, Tamima Saba’s PhD Committee, Title: “The Role of Magnetic Properties of Solar Active Regions in the Initiation of Coronal Mass Ejections”. Prospectus talk presented in November 2025.
- **[active]** PhD Committee lead, Griffin Goodwin’s PhD Committee, Title: “Can We Improve Machine Learning-based Solar Flare Forecasting?”. Prospectus talk presented in February 2025.
- **[active]** PhD Committee lead, Aatiya Ali’s PhD Committee, Title: “Solar Energetic Particle Variability and Forecasting near Earth and Cislunar Space”. Prospectus talk presented in November 2024.
- **[active]** PhD Committee lead, Sanjib K C’s PhD Committee, Title: “Radiation Exposure at Aviation Altitudes: A Perspective of Machine Learning Analysis and Cosmic Ray Muon Measurements”. Prospectus talk presented in May 2026.
- **[active]** PhD Committee member, Zachary Way’s PhD Dissertation committee (Chair Dr. Sebastien Lepine, 2024, ongoing)
- **[active]** PhD Committee member, Maura Shea’s PhD Dissertation committee (Chair Dr. Mike Crenshaw, 2024, ongoing)
- **[active]** PhD Committee member, Enosh Herath’s PhD Dissertation committee (Chair Dr. Xiaochun He, 2026, ongoing)

- **[active]** PhD Committee member, Chris Meherg's PhD Dissertation committee (Chair Dr. Yang-Ting Chien, 2026, ongoing)
- **[active]** PhD Committee member, Muhammad Shumail Khan's PhD Dissertation committee (Chair Dr. Mukesh Dhamala, 2026, ongoing)
- Search Committee Co-Chair, search for the Tenure-Track Assistant Professor in Solar Physics and Astro-informatics (Co-Chaired with Dr. Martens, Fall 2023 – Spring 2024)
- Search Committee member, search for two lecturers in physics (Chair Dr. Doluweera, Spring 2022)
- Resources Committee Member (Fall 2025 – Spring 2026)
- Participation in Ph.D. student admissions (2021-2026)
- Computing Committee chair (Fall 2024 – Spring 2025)
- Publicity/Outreach Committee member (Fall 2024 – Spring 2025)
- Academic Program Review Committee member (Fall 2024 – Spring 2025, the entire department is involved after that date)
- PhD Committee member, Krishna Rana Magar's PhD Defense committee, Title: "Nonlinear Optical Response of Two Dimensional Topological Materials" (Summer 2025)
- PhD Committee member, Neva Agarwala's PhD Defense committee, Title: "Time-Resolved FTIR Difference Spectroscopy for The Study of Quinones in Photosynthetic Protein Binding Sites" (Fall 2022)
- Emergency Building Coordinator for 25 Park Place NE, 5th floor, Physics & Astronomy (Fall 2021 – 2023; rearrangement of the coordination structure)
- Evaluation Committee member, Arfa Mubashir's MS Defense committee, Title: "Sensitive Study of Cosmic Ray Flux Variation with Space Weather and Geomagnetic Disturbances" (Fall 2021)
- Dissertation Committee member, Katherine Shepard's PhD Dissertation committee (Chair Dr. Douglas Gies, 2024)
- Dissertation Committee member, India Jackson's PhD Dissertation committee (Chair Dr. Petrus Martens, 2024)
- Dissertation Committee member, Varun Chaturmutha's PhD Dissertation committee (Chair Dr. Stuart Jefferies, 2024, completed)
- Dissertation Committee member, Uttam Acharya's PhD Dissertation committee (Chair Dr. Murad Sarsour, 2024, completed)
- Dissertation Committee member, Arfa Mubashir's PhD Dissertation committee (Chair Dr. Xiaochun He, 2024, completed)

5.2. Service to the College

All services listed above are related to the activities of the Computer Science (CS) department.

- **[active]** PhD Committee member, Rimsha Syeda's PhD Committee (CS), Title: "Improving Regression Performance in Scientific Surrogate Models Using Deep Learning: Application to Solar Subgrid Turbulence". Prospectus talk presented in May 2026.
- Search Committee member, search for the junior faculty position joining the AstroInformatics Cluster on the CS side (Chair Dr. Angryk, Spring 2022)
- PhD Committee member, Anli Ji's PhD Defense Committee, Title: "Interval-based Multivariate Time Series Analysis with Applications to Space Weather Forecasting". Defended in July 2025.

- PhD Committee member, Junzhi Wen’s PhD Proposal Committee (CS), Title: “Machine Learning for Rare Event Prediction in Imbalanced Real-World Multivariate Time Series Data”. Defended in July 2026
- Master’s Thesis Committee Member, Bhargav Nelluri’s MS Defense Committee, Title: “Muon Data Analysis”, Department of Computer Science (Chair Dr. Ashwin Ashok, Spring 2023)
- Master’s Thesis Committee Member, Sai Praneeth Yerrapu Reddy’s MS Defense Committee, Title: “Muon Data Analysis”, Department of Computer Science (Chair Dr. Ashwin Ashok, Spring 2023)

5.3. Service to the University

- Event Supervisor, Science Olympiad remote sensing event, 2026 (hosted by GSU)
- Poster presentation contest judge, 2025, Georgia State University Research Conference (GSURC, April 2025)
- Poster presentation contest judge, 2023 Scientific Computing Day at GSU
- Event Supervisor, Science Olympiad flying event, 2024 (hosted by GSU)

5.4. Service to the Profession

- Organization of major conferences at GSU, including:
 - Conference lead organizer, “Development of Affordable Materials for Upper-Division Electricity & Magnetism (Regional Workshop)”, May 29, Georgia State University (2026)
Website: <https://sites.google.com/view/emworkshop-ga-2026/>
 - Conference lead organizer, “Operational and Exploration Requirements and Research Capabilities for SEP Environment Monitoring and Forecasting”, October 16-19, 2024, Georgia State University (2024).
Website: <https://sites.google.com/view/sepmeeting2024>
 - Conference co-organizer, “2nd International Workshop on Applications of Cosmic Ray Measurements (WACR 2024)”, 11th - 14th March 2024, GSU.
Website: <https://sites.google.com/view/wacr24/home>
- Science Working Group member, Next generation Ground-based solar Observing Network (ngGONG, the network of ground-based telescopes for routine observations of the solar photosphere and chromosphere), April 2026 – now.
- Conference co-organizer of “SABID 2026: Workshop on Solar & Stellar Astronomy Big Data”. Co-located with IEEE (in progress)
- Conference co-organizer of “SABID 2025: Workshop on Solar & Stellar Astronomy Big Data”. Co-located with ICDM 2025, Washington DC, USA, Nov 12-15, 2025.
- Planetarium public lecture. Sadykov, V.M. How's the Weather in Space? Exploring Solar Physics and Space Weather — and How AI Helps Us Understand the Sun. 2025, Cosmic Conversations Series, December 4, 2025, Fernbank Science Center.
- Team Co-lead, COSPAR International Space Weather Action Teams (COSPAR ISWAT) team O2-03 “Data archive preparation and implementation to advance Machine Learning activities for space weather forecasting in support of human exploration” (2021-now)
- NASA COFFIES DSC Beans coordinator (2023–now). COFFIES DSC stands for Consequences Of Fields and Flows in the Interior and Exterior of the Sun DRIVE Science Center. Beans is the early career scientists’ program within the Center.

- Reviewer, the Astrophysical Journal Letters (2020–), the Astrophysical Journal (2018–), Advances in Space Research (2016–), Astronomical Journal (2019–), Space Weather Journal (2019–), NASA FLD 2018&2019, SABID 2019, Data in Brief (2021–), Nature Scientific Data (2021–). Three papers are reviewed in 2025-2026 (multiple iterations).
- NSF panelist and mail-in reviewer, 2021-2023 (no reviews in 2025-2026)
- NASA panelist and mail-in reviewer, 2023-2026 (one online panel and six mail-in reviews in 2025-2026)
- European Research Council main-in reviewer, 2024
- Session organizer and convener, conferences: mini-ISWAT (International Space Weather Action Teams) 2023, SHINE 2019&2022&2025, AGU Fall Meetings 2020-2025 (in each year, three sessions in 2025), “Applications of Statistical Methods and Machine Learning in the Space Sciences” 2021, Workshop on Machine Learning, Data Mining and Data Assimilation in Geospace (LMAG, 2025).
- Helper in support of exhibitions, Atlanta Science Festival (2023-2026), National Society of Black Physicists annual meeting (2023)
- NASA Frontier Development Lab external reviewer/advisor (2024)
- Hard Labor Creek Observatory volunteer for observing nights (2024-2026)
- Participant of the Electromagnetism Professors Alliance of GA (E&MPA GA, 2024 – ongoing). E&MPA GA represents the collaboration between several professors at GSU and Georgia Southern University in order to improve the structure of and practices in the Electricity and Magnetism classes taught.