Curriculum Vitae

Dr. Laxman Adhikari
Postdoctoral Research Assistant
Center for Space Plasma and Aeronomic Research
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Education:

- PhD in Physics, August 2015, University of Alabama in Huntsville, advisor: Gary P. Zank, thesis title: "The Transport of Turbulence in Large-scale Inhomogeneous Astrophysical Flows with Application to the Solar Wind"
- Master of Science (MS) in Physics, 2012, University of Alabama in Huntsville

Awards:

- CSPAR Award, 2017
- Graduate Research Assistant Award, 2015
- Alabama EPSCoR, 2014-2015

Appointments:

- Postdoctoral Research Assistant, Center for Space Plasma and Aeronomic Research, University of Alabama in Huntsville, Huntsville, Alabama, USA, 2015-present
- Student Specialist V, Center for Space Plasma and Aeronomic Research, University of Alabama in Huntsville, Huntsville, AL, USA, May 2015- August 2015
- Graduate Research Assistant, Department of Physics, University of Alabama in Huntsville, Huntsville, AL, USA, May 2012- May 2015
- Graduate Teaching Assistant, Department of Physics, University of Alabama in Huntsville, Huntsville, AL, USA, January 2011- May 2012

Advisor and Collaborators:

- Gary P. Zank, Director of the Center for Space Plasma and Aeronomic Research (CSPAR); Chair of Department of Space Science, University of Alabama in Huntsville; Associate Editor of the Astrophysical Journal. PhD advisor (2011-2015); apostdoctoral advisor (2015-present)
- Collaborators: Gary P. Zank, Peter Hunana, Qiang Hu, Roberto Bruno, Alexander Dosch, Daniele Telloni, Raffaele Marino, Melvyn L. Goldstein, Gary M. Webb, Daikou Shiota, Lingling Zhao, Olga Khabarova.

Teaching Experiences:

- Wave in Fluids (630): 5 classes (2016, Fall)
- Transport Processes in Space (623): 6 classes (2017, Spring)
- Transport Processes in Space (623): 2 classes (2018, Spring)

Service:

- I have reviewed 17 papers for: The Astrophysical Journal (15), Solar wind Conference Proceedings (1), Annual International Astrophysics Conference Proceedings (1)

- I have helped for Science Olympiad, Physics Department, UAHuntsville (2011-2014)

Conferences & Meetings (Total=22):

- Talk at the 19th Annual International Astrophysics Conference, Santa Fe, New Mexico, 2019
- Poster presentation at the AGU Fall Meeting, San Francisco, California, 2019
- Talk at the Parker Solar Probe meeting, Caltec, California, 2019
- Talk at the 18th Annual International Astrophysics Conference, Pasadena, California, 2019
- Poster presentation at the AGU Fall Meeting, Washington DC, 2018
- Poster presentation at the Shine Conference, Cocoa Beach, Florida, 2018
- Talk at the Cospar 22nd Assembly, Pasadena, California, 2018
- Talk at the 17th Annual International Astrophysics Conference, Santa Fe, New Mexico, 2018
- Talk at St. Xavier's College, Kathmandu, Nepal, 2018
- Talk at Patan Multiple Campus, Kathmandu, Nepal, 2018
- Poster presentation at the AGU Fall Meeting, San Francisco, 2017
- Talk at the 16th Annual International Astrophysics Conference, Santa Fe, New Mexico, 2017
- Talk at the 15th Annual International Astrophysical Conference, Cape Coral, Florida, 2016
- Poster presentation at the AGU Fall Meeting, San Francisco, 2015
- Poster presentation at the Solar Wind 14 Conference, Weihai, China, 2015
- Poster presentation at University of Alabama in Huntsville's welcome of week (WOW), 2015
- Talk at the 14th Annual International Astrophysical Conference, Tampa Bay, Florida, 2015
- Poster Presentation at Open Science House, Montgomery, Alabama, USA, 2015
- Talk at the 13th Annual International Astrophysical Conference, Myrtle Beach, South Carolina, 2014
- Poster presentation at Von Braun Memorial Symposium, Huntsville, Alabama, USA, 2014
- Talk at the 12th Annual International Astrophysical Conference, Myrtle Beach, SC, 2013
- Poster presentation at Von Braun Memorial Symposium, Huntsville, Alabama, USA, 2013

Refereed Publications:

- L. Adhikari , G. P. Zank, Q. Hu, and A. Dosch. 2014. Turbulence Transport Modeling of the Temporal Outer Heliosphere. ApJ, 793:52
- L. Adhikari , G. P. Zank, R. Bruno, D. Telloni, P. Hunana, A. Dosch, R. Marino, and Q. Hu. 2015. The transport of low-frequency turbulence in astrophysical fows. ii. Solutions for the super-alfvenic solar wind. The Astrophysical Journal, 805(1):63
- L.Adhikari, G.P. Zank, P. Hunana, and Q. Hu. 2016. The interaction of turbulence with parallel and perpendicular shocks: Theory and Observations at 1 AU. ApJ, 833, 218
- G. P. Zank, L. Adhikari, P. Hunana, D. Shiota, R. Bruno, and D. Telloni. 2017. Theory and Transport of Nearly Incompressible Magnetohydrodynamic Turbulence. ApJ, 835, 147
- D. Shiota, G. P. Zank, L. Adhikari, P. Hunana, 2017. Turbulence Transport Model in a Structured Three-Dimensional Solar Wind. ApJ, 837, 75
- L. Adhikari, G. P. Zank, P. Hunana, D. Shiota, R. Bruno, Q. Hu, and D. Telloni. 2017. II. Transport of Nearly Incopressible Magnetohydrodynamic Turbulence from 1 – 75 AU. ApJ, 841, 85
- L.-L Zhao, L. Adhikari, G. P. Zank, Q. Hu, and X.S. Feng, 2017, Cosmic Ray Diffusion Tensor throughout the Heliosphere Derived from a Nearly Incompressible Magnetohydrodynamic Turbulence Model. ApJ, 849, 88
- L. Adhikari, G.P. Zank, D. Telloni, P. Hunana, R. Bruno and D. Shiota. 2017, Theory and Transport of Nearly Incompressible Magnetohydrodynamics Turbulence. III. Evolution of Power Anistropy in Magnetic Field Fluctuations throughout the Heliosphere, ApJ, 851, 117

- G. P. Zank, L. Adhikari, P. Hunana, S. K. Tiwari, R. Moore , D. Shiota, R. Bruno and D. Telloni. 2018, Theory and Transport of Nearly Incompressible Magnetohydrodynamic Turbulence. IV. Solar Coronal Turbulence. ApJ, 854, 32
- L.-L. Zhao, L. Adhikari, G. P. Zank, Q. Hu, and X. S. Feng. 2018, Influence of the Solar Cycle on Turbulence Properties and Cosmic-Ray Diffusion. ApJ, 856, 94
- L. -L Zhao, G.P. Zank, O. Khabarova, S. Du, Y. Chen, L. Adhikari, Q. Hu, 2018, An unusual energetic particle flux enhancement associated with solar wind magnetic island dynamics, The Astrophysical Journal Letters 864 (2), L34
- G.P. Zank, L. Adhikari, L.-L Zhao, P. Mostafavi, E.J. Zirnstein, D.J. McComas, 2018, The pickup ion-mediated solar wind, The Astrophysical Journal 869 (1), 23
- P. Hunana, G. P. Zank, M. Laurenza, A. Tenerani, G. M. Webb, M. L. Goldstein, M. Velli, L. Adhikari. 2018, New closures for more precise modeling of Landau damping in the fluid framework, Physical review letters, 121 (13), 135101
- L. Adhikari, G. P. Zank, L- .L . Zhao. 2019, Does turbulence turn off at the Alfven critical surface. 2019, The Astrophysical Journal, 876 (1), 26
- L. Adhikari, O. Khabarova, G. P. Zank, L-. L. Zhao. 2019, The role of magnetic reconnection-associated processes in local particle acceleration in the solar wind, The Astrophysical Journal, 873 (1), 72
- L-. L. Zhao, G. P. Zank, Y. Chen, Q. Hu, J. A. le Roux, S. Du, L. Adhikari. 2019, Particle acceleration at 5 au associated with turbulence and small-scale magnetic flux ropes, The Astrophysical Journal, 872 (1), 4
- P. Hunana, A. Tenerani, G. P. Zank, E. Khomenko, M. L. Goldstein, G. M. Webb, P. S. Cally, M. Collados, M. Velli, L. Adhikari. 2019, An introductory guide to fluid models with anisotropic temperatures. Part 1. CGL description and collisionless fluid hierarchy, Journal of Plasma Physics, 85 (6)
- P. Hunana, A. Tenerani, G. P. Zank, M. L. Goldstein, G. M. Webb, E. Khomenko, M. Collados, P. S. Cally, L. Adhikari, M. Velli. 2019, An introductory guide to fluid models with anisotropic temperatures. Part 2. Kinetic theory, pade approximants and Landau fluid closures, Journal of Plasma Physics, 85 (6)
- D. Telloni, F. Carbone, R. Bruno, L. Sorriso-Valvo, G. P. Zank, L. Adhikari, P. Hunana. 2019, No evidence for critical balance in field-aligned alfvenic solar wind turbulence, The Astrophysical Journal, 887 (2), 160
- J. A. Le Roux, G. M. Webb, O. V. Khabarova, L-. L Zhao, L. Adhikari. 2019, Modeling energetic particle acceleration and transport in a solar wind region with contracting and reconnecting small-scale flux ropes at Earth orbit, The Astrophysical Journal, 887 (1), 77
- L-. L Zhao, G. P. Zank, Q. Hu, Y. Chen, L. Adhikari, A. Cummings, E. Stone, L. F. Burlaga. 2019, ACR proton acceleration associated with reconnection processes beyond the heliospheric termination shock, The Astrophysical Journal, 886 (2), 144
- L. Adhikari, G. P. Zank, L.-L Zhao, J. C. Kasper, K. E. Korreck, M. Stevens, A. W. Case, P. Whittlesey, D. Larson, R. Livi, K. G. Klein. 2020, Turbulence transport modeling and first orbit Parker Solar Probe (PSP) observations, The Astrophysical Journal Supplement Series, 246 (2), 38
- L. - L Zhao, G. P. Zank, L. Adhikari, Q. Hu, J. C. Kasper, S. D. Bale, K. E. Korreck, A. W. Case, M. Stevens, J. W. Bonnell, T. Dudok de Wit, K. Goetz, P. R. Harvey, R. J. MacDowall, D. M. Malaspina, M. Pulupa, D. E. Larson, R. Livi, P. Whittlesey, K. G. Klein. 2020, The Astrophysical Journal Supplement Series, 246 (2), 26
- L. Adhikari, G. P. Zank, L. - L Zhao, G. M. Webb. 2020, Evolution of entropy and mediation of the solar wind by turbulence, The Astrophysical Journal, 891 (1), 34

Conference publications:

- A. Dosch, L. Adhikari, G. P. Zank. 2013, The transport of low-frequency turbulence in astrophysical flows: Correlation lengths. 2013, AIP Conference Proceedings, 1539 (1), 155 – 158
- L. Adhikari, G. P. Zank, Q. Hu, A. Dosch. 2014, Turbulence transport modeling of the temporal outer heliosphere, Astronomical Society of the Pacific Conference Series, 484 (1)
- L. Adhikari, G. P. Zank, R. Bruno, D. Telloni, P. Hunana, A. Dosch, R. Marino, Q. Hu. 2015, The transport of low-frequency turbulence in the super-Alfvenic solar wind, Journal of Physics: Conference Series, 642 (1), 012001
- L. Adhikari, G. P. Zank, P. Hunana, Q. Hu. 2016, The interaction of turbulence with parallel and perpendicular shocks, Journal of Physics: Conference Series, 767 (1), 1-13
- L. Adhikari, G. P. Zank, P. Hunana, R. Bruno, D. Telloni, R. Marino. 2016, Turbulence in the heliosphere, AIP Conference Proceedings, 1720 (1), 040001
- P. Hunana, G. P. Zank, M. L. Goldstein, G. M. Webb, L. Adhikari. 2016, CGL description revisted, AIP Conference Proceedings, 1720 (1), 030002
- L. Adhikari, G. P. Zank, P. Hunana, R. Bruno, D. Telloni, Q. Hu, D. Shiota. 2017, Nearly incompressible turbulence for different 2D and slab energy ratios, 900 (1), 012001
- G. P. Zank, L. Adhikari, P. Hunana, D. Shiota, R. Bruno, D. Telloni, K. Avinash. 2017, The theory of nearly incompressible magnetohydrodynamic turbulence: Homogeneous description, Journal of Physics: Conference Series, 900 (1), 012023
- L. Adhikari, G. P. Zank, L.- L. Zhao, D. Telloni, P. Hunana, D. Shiota. 2018, Evolution of power anisotropy in magnetic field fluctuations at different solar activity levels, Journal of Physics: Conference Series, 1100 (1), 012001
- L. - L. Zhao, L. Adhikari, G. P. Zank, Q. Hu, X. S. Feng. 2018, Analytical investigation of turbulence quantities and cosmic ray mean free paths from 1995 – 2017, Journal of Physics: Conference Series, 1100 (1), 012029
- L. -L. Zhao, G. P. Zank, L. Adhikari. 2019, A possible explanation for the enhancement of particles downstream of the heliospheric termination shock, Journal of Physics: Conference Series, 1332 (1), 012020