

LIST OF PUBLICATIONS

Appendix 1

a) Books

1. **V.V.Zharkova, Particle kinetics and dynamics in flaring atmospheres (monograph)**, by Wiley and Sons, 18 July 2012, 455 pp (monograph)
<http://www.wiley.com/WileyCDA/WileyTitle/productCd-3527408479.html>
2. **V.V.Zharkova and L.Jain (eds), INTELLIGENT PARADIGMS OF FEATURE RECOGNITION IN ASTROPHYSICAL AND MEDICAL IMAGES**, Studies in Computational Intelligence, v46, , Springer Verlag, Berlin , Heidelberg, pp. 394 .
<http://www.springer.com/west/home?SGWID=4-102-22-173695523-0>
3. Chapters to the book above:
 - i. Introduction to pattern recognition and classification in astrophysical and medical images (Zharkova V.V.)
 - ii. Intensity-based Feature Recognition in Solar Images (V. Zharkova, S. Ipson, & Zharkov S.I.)
 - iii. Edge-based methods for solar feature (Zharkov, S.I., Zharkova V.V. and Ipson, S.S.)
 - iv. Region-based Feature Recognition in Solar Images (V. Zharkova,)
 - v. Motion detection in solar images (V. Zharkova, S. Ipson, S. Zharkov and A. Benkhalil)
 - vi. Machine Learning Methods for Pattern Recognition in Solar Images (V.Schetinin, V.V.Zharkova and Zharkov S.I.)
 - vii. Machine Learning Methods for Feature Classification in Solar Images (V.Schetinin, V.V.Zharkova, and A. Brazhnikov)
 - viii. Image Standardisation and Filtering Techniques (S. Ipson, V. Zharkova, S. Zharkov& A. Benkhalil)
 - ix. Standard Image Enhancement Techniques (S. Ipson, V. Zharkova and S. Zharkov)
4. **Chapters in the RHESSI Book (2011)**
 1. Holman G.D., Aschwanden M.J., Auras H., Kontar E.P. and Zharkova V.V. (2010): "Implications of X-ray observations for electron acceleration and propagation in solar flares", Advances with the RHESSI Observations, Space Science Review, Dennis, B., Emslie, G.and R.Lin (eds.), Springer, pp. 55pp., DOI: 10.1007/s11214-010-9680-9, <https://arxiv.org/pdf/1109.6496.pdf>
 2. Zharkova V.V., Aurass H., Mann G., Vilmer N. and et al.(6 authors) (2010): "Advances in the theory of particle acceleration and transport in solar flares ", Advances in the RHESSI observations, Space Science Review, Dennis, B., Emslie, G. and R. Lin (eds.), Springer, pp. 66pp., DOI: 10.1007/s11214-011-9803-y, <https://arxiv.org/pdf/1110.2359.pdf>
5. **Chapter in the book ‘Solar system planets and exoplanets’**

by Zharkova V. V., Millennial oscillations of solar irradiance and magnetic field at Earth in 600-2600, [read it](#) [download](#)

Papers in Peer-reviewed journals

2023

1. **V. V. Zharkova**, I. Vasilieva, E. Popova and S. J. Shepherd, [Comparison of solar activity proxies: eigenvectors versus averaged sunspot numbers](#), **MNRAS** **521**, 6247–6265 (2023) [journal version](#), [read it](#)

2. **V.Zharkova**, I. Vasilieva, S.J. Shepherd and E. Popova, Periodicities in Solar Activity, Solar Radiation and Their Links with Terrestrial Environment, **Natural Science**, Vol.15 No.3, March 2023 read it
3. **Zharkova, Valentina V.**; Vasilieva, Irina; Shepherd, Simon; Popova, Elena, Periodicities of solar activity and solar radiation derived from observations and their links with the terrestrial environment, **eprint arXiv:2301.07480**, January 2023, 10.48550/arXiv.2301.07480
4. **Vasilieva I. and Zharkova V.** Links of Terrestrial Volcanic Eruptions to Solar Activity and Solar Magnetic Field, 2023, **Global Journal of Science Frontier Research: A Physics and Space Science**, Volume 23 Issue 3 Version 1.0, 22-34 read it
5. **Zharkova V.V. and Vasilieva I.**, Terrestrial temperature, sea levels and ice area links with solar activity and solar orbital motion, 2023, Natural Sciences, vl. 15, N9, Sept 2023, journal version, preprint read it

2022

1. Zharkova V. V and Shepherd S.J. Eigen vectors of solar magnetic field in cycles 21-24 and their links to solar activity indices, 2022, *Monthly Notices of the Royal Astronomical Society*, stac781, <https://doi.org/10.1093/mnras/stac781>, published 22 March 2022, read it
2. Vasilieva I. and Zharkova V.V., Terrestrial volcanic eruptions and their link with solar activity, 2022, eprint arXiv:2203.03637, read it
3. Vasilieva I. and Zharkova V.V. Terrestrial volcanic eruptions and their possible links with solar activity, 2022, *Astrophysical J.*, in press, read it
4. Zharkova V., Vasilieva I., Shepherd S. and Popova E., Comparison of solar activity proxies: eigen vectors versus averaged sunspot numbers, eprint arXiv, read it

2021

6. Zharkova, V. V. and Xia, Q. , Pitch-angle distribution of accelerated electrons in 3D current sheets with magnetic islands, *Astronomy and Astrophysics*, 648, A51, read it
7. Zharkova V. V., Millennial oscillations of solar irradiance and magnetic field at Earth in 600-2600, chapter in a book 'Solar system planets and exoplanets, read it download
8. Zharkova, V. V. and Xia, Q., Plasma turbulence generated in 3D current sheets with single and multiple X-nullpoints, *Front. Astron. Space Sci.*, 26 November 2021 | <https://doi.org/10.3389/fspas.2021.665998>, read it

2020

1. Zharkova V. V., Solar activity, solar irradiance and terrestrial temperature, popular chapter, eprint arXiv:2008.00439, read it Appendix 1 – Sun-Earth daily distances 600-2600; Appendix 2 – daily solar irradiance 600-2600

Prof. V.V.Zharkova - Publications

2. Xia, Q. and Zharkova V., Plasma turbulence generated during particle acceleration in reconnection current sheets with magnetic islands, preprint, ESSAr, <https://doi.org/10.1002/essoar.10503640.1>
3. Valentina Zharkova, Modern Grand Solar Minimum will lead to terrestrial cooling, 2020, Temperature, paper, [pdf file](#), [Taylor & Francis Online](#).
4. Sergei Zharkov, Sarah Matthews, Valentina Zharkova, Malcolm Druett, Satoshi Inoue, Ingolf E. Dammasch and Connor Macrae, Sunquake with a second-bounce, other sunquakes and emission associated with X9.3 flare of 6 September 2017. I. Observations, 2020, A&A, 639, A78, [read it](#)
5. Valentina Zharkova, Sergei Zharkov, Malcolm Druett, Sarah Matthews, and Satoshi Inoue, Sunquake with a second-bounce, other sunquakes and emission associated with X9.3 flare of 6 September 2017. II. Proposed interpretation, 2020, A&A, 639, A79, [read it](#)
6. O. Khabarova, V. Zharkova, Q. Xia, and O. E. Malandraki, Counter-streaming strahls and heat flux dropouts as possible signatures of local particle acceleration in the solar wind, 2020, ApJ Let. , 894, N1, L12, [read it](#)
7. Qian Xia and Valentina Zharkova, Particle acceleration in coalescent and squashed magnetic islands. I. Particle-in-cell approach, 2020, A&A, 635, A116, DOI: 10.1051/0004-6361/201936420, [read it](#)
8. Qian Xia, Joel Dahlin, Valentina Zharkova and Spiro Antiochos, Particle acceleration and transport during 3D CME eruptions, 2020, ApJ, 894, N2, 89, [read it](#)
9. V. V. Zharkova, S.J. Shepherd and E. Popova, Erratum – baseline magnetic field oscillations: possible SIM effects on solar irradiance and temperature at Earth, 2020, subm, [read it](#)
10. Valentina Zharkova and Qian Xia, Particle acceleration in coalescent and squashed magnetic islands. I. Particle-in-cell approach, 2020, A&A, 635, A116, [read it](#)

2019

1. Zharkova V.V., Shepherd S.J., Zharkov S. and Popova E., Oscillations of the baseline of solar magnetic field and solar irradiance on a millennial timescale, 2019, Scientific Reports, 9, 9197 [read it here](#)
2. The erratum paper with the additional plots confirming the millennial (Hallstatt's) period of oscillations and the estimations of solar irradiance variations caused by the Sun-Earth distance changes taken directly from the JPL ephemeris induced by the SIM on the Earth-Sun system with the effects of four large planets (Jupiter, Saturn, Neptune and Uranus) [read it here](#)
3. Druett M. and Zharkova V., Non-thermal hydrogen Lyman line and continuum emission in solar flares generated by electron beams, Astronomy and Astrophysics, 2019, Volume 623, id.A20, 22 pp., [read it](#)

2018

5. Qian Xia and Valentina Zharkova, Particle acceleration in coalescent and squashed magnetic islands. I. Test particle approach, 2018, Astronomy and Astrophysics, 620, 121 [read it](#)

6. Connor Macrae, Sergei Zharkov, Valentina Zharkova, Malcolm Druett, Sarah Matthews, and Tomoko Kawate, Lost and found sunquake in the 6 September 2011 flare caused by beam electrons, 2018, *Astronomy and Astrophysics*, v.619, A65, [read it](#)
7. Zharkova V.V., Shepherd S.J., Popova E. and Zharkov S., Reinforcing the double dynamo model with solar-terrestrial activity in the past three millennia, 2018, *Space Weather of the Heliosphere: Processes and Forecasts*, Proceedings of the International Astronomical Union, IAU Symposium, V. 335, pp. 211-215, [read it](#)
8. Zharkova V. Re-acceleration of solar wind particles in the 3D heliospheric current sheet, 2018, *Space Weather of the Heliosphere: Processes and Forecasts*, Proceedings of the International Astronomical Union, IAU Symposium, V. 335, pp. 54-57, [read it](#)
9. Druett M. and Zharkova V., Non-thermal hydrogen Balmer and Paschen emission in solar flares generated by electron beams, *Astronomy and Astrophysics*, 2018, 610, A68, 29. [read it](#)
10. Popova E., Zharkova V.V., Shepherd S.J. and Zharkov S., On a role of quadruple component of magnetic field in defining solar activity in grand cycles, 2018, *Journal of Atmospheric and Solar-Terrestrial Physics*, Volume 176, p. 61-68, <https://doi.org/10.1016/j.jastp.2017.05.006>, [read it](#)
11. Zharkova V.V., Popova E., Shepherd S.J. and Zharkov S., Reply to comment by Usoskin (2017) on the paper "On a role of quadruple component of magnetic field in defining solar activity in grand cycles", 2018, *J. of Atmospheric and Solar-Terrestrial Physics(JASTP)*,v. 176, pp. 72-82, <https://doi.org/10.1016/j.jastp.2017.09.019>,

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13. Druett M., Scullion E., Zharkova V., Matthews S., Zharkov S. and Van der Voort, L.P. BEAM ELECTRONS AS A SOURCE OF H-alpha FLARE RIBBONS, 2017, **Nature Communications**, 8, 15905
14. Druett M. and Zharkova V., Non-thermal hydrogen Balmer and Paschen emission in solar flares generated by electron beams, *Astronomy and Astrophysics*, 2017, DOI: <https://doi.org/10.1051/0004-6361/201731053>, in press
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19. Zharkova V.V. and Zharkov S.I., On generation of hydrodynamic shocks by mixed beams and occurrence of sunquakes in flares, 2015, *Sol.Phys.*, 290, 3163
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http://computing.unn.ac.uk/staff/slmv5/kinetics/DZ_Ohmic_Losses_Part1_v1.pdf
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23. O. V. Khabarova, G. P. Zank, G. Li, J. A. le Roux, G. M. Webb, A. Dosch, O. E. Malandraki, Zharkova V.V., Dynamical small-scale magnetic islands as a source of local acceleration of particles in the solar wind , 2015, *Journal of Physics: Conference Series (JPCS)*, 642, 012033

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25. Dobranskis R.R. and Zharkova V.V., Exact Analytical Solutions of Continuity Equation for Dynamics of Electron Beams Precipitating into Flaring Atmospheres, *Astrophysical Journal*, 2014, 788, 42

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26. Zharkov S.I., Green L.M., Matthews S.A. and Zharkova V.V., 2013, Properties of the 15 February 2011 Flare Seismic Sources, *Solar Phys.*, 284/2, 315
9. Zharkov S.I., Green L.M., Matthews S.A. and Zharkova V.V., 2013, On the Seismicity of September 7, 2011 X1.8-class Flare, *Journal of Physics: Conference Series*, Volume 440, Issue 1, article id. 012046
10. Amsheri, S. M., Zharkova, V. Differential subordinations and superordinations for p -valent functions defined by fractional derivative operator. Accepted by *Demonstratio Mathematica*.
11. Amsheri, S. M., Zharkova, V. Characterization properties for starlikeness and convexity of some subclasses of p -valent functions involving a class of fractional integral operators. *Journal of Mathematics and Statistics*.
12. Amsheri, S. M., Zharkova, V. (2013) Certain coefficient inequalities for some subclasses of p -valent functions. *Int. J. Mathematics and statistics (IJMS)*. 13(1), pp. 69-82.
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14. Matthews, S.A., et al, 2012, Solar Particle Acceleration Radiation and Kinetics (SPARK). A mission to understand the nature of particle acceleration, *Experimental Astronomy*, Volume 33, Issue 2-3, pp. 237-269
15. Matthews, S.A., Zharkov S.I. and Zharkova V.V., 2012, The Seismic Response of the 14 December 2006 Flare, *Hinode-3: The 3rd Hinode Science Meeting, Proceedings of the conference held 1-4 December 2009 at Hitotsubashi Memorial Hall, Tokyo, Japan*. Edited by T. Sekii, T. Watanabe, and T. Sakurai. ASP Conference Series, Vol. 454. San Francisco: Astronomical Society of the Pacific, 2012., p.277
16. Zharkova, V., Shepherd S. and Zharkov S., Principal Component Analysis of Background and Sunspot Magnetic Field Variations During Solar Cycles 21-23, 2012, *MNRAS*, 424, 2943
<http://adsabs.harvard.edu/abs/2012MNRAS.424.2943Z>
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20. Amsheri, S. M., Zharkova, V. (2012c) Some coefficient inequalities for p -valent functions associated with certain fractional derivative operator. *Far East J. Math. Sci. (FJMS)*. 62 (1), pp. 61-77.
21. Amsheri, S. M., Zharkova, V. (2012d) Coefficient bounds for certain class of p -valent non-Bazilevič functions. *Pioneer Journal of Mathematics and Mathematical Sciences*. 4(2), pp. 257-271.
22. Amsheri, S. M., Zharkova, V. (2012e) Inequalities for analytic functions defined by certain fractional derivative operator. *Int. J. Contemp. Math. Sciences*. 7(28), pp. 1363-1371.
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30. 2. Zharkova V.V. and Siversky T.V. (2011), The Effects of Electron-beam-induced Electric Field on the Generation of Langmuir Turbulence in Flaring Atmospheres, *Astrophysical Journal*, Volume 733, Issue 1, 33, published in May 2011, <http://adsabs.harvard.edu/abs/2011ApJ...733...33Z>
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32. Zharkova, V.V., Kashapova, L.K., Chronogor, S.N., Andrienko, O.V., The effect of energetic particle beams on chromospheric emission in the solar flare of 25th July 2004, *MNRAS*, 411/3, 1562, 2011
33. Zharkova V.V., K. Arzner, A. O. Benz, P., Browning, C. Dauphin, A. G. Emslie, L., Fletcher, E. P. Kontar, G. Mann, M. Onofri, V. Petrosian, R. Turkmani, N. Vilmer, and L. Vlahos, , 'Recent Advances in Understanding Particle Acceleration Processes in Solar Flares', chapter 8 in the book 'High-Energy Aspects of Solar Flares in the RHESSI era', special issue of *SSRv*, 159, 347, 2011 (chapter in book)
34. Holman, G.D., M. J. Aschwanden, H. Aurass, M., Battaglia, P. C. Grigis, E. P. Kontar, W. Liu, P. Saint-Hilaire, V. V. Zharkova, 'Implications of X-ray Observations for Electron Acceleration and Propagation in Solar Flares', chapter 3 in the book 'High-Energy Aspects of Solar Flares in the RHESSI era', special issue of *SSRv*, 159, 108, 2011.
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- The CORONAS project and the scientific programme of X-ray and XUV observations, 1994, Proc. of the Third SOHO Workshop, Estes Park, Colorado, USA, 26-29 September, (ESA SP-373, 1994, 385-391)
37. V.V.Zharkova and J.C.Brown, The effect of the ambient heating function on the XUV emission of a flaring atmosphere, 1994, Proc. of the Third SOHO Workshop, Estes Park, Colorado, USA, September, (ESA SP-373), December 1994), 61-65
 38. V.V.Zharkova and V.A.Kobylinskij. The effect of electron beams on the hydrogen emission in impulsive flares on the Sun and stars; in Proc. of the IAU Colloquium N 137 "Inside the stars", 1993, Vienna, Austria
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 40. Zharkova V.V. Toward hydrogen emission in structurally inhomogeneous prominences, Proceedings of the No117 Colloq. of the IAU "Dynamics of quiescent prominences", Hvar, Jugoslavija, p.280-285
 41. V.V.Zharkova, Towards radiative energy losses in solar flares; Proc. of the Astro-Council annual meeting, section "The Sun", Alma-Ata, 1987, p.103-104

Sessions organised and chaired:

1. Joint UK-Ukraine_Spain (UKUS) meeting on Solar Physics and Space Science, 28/08-01/09/2019, Kiev, Ukraine (Session chair)
2. Chair and the main organizer of the STFC Introductory Summer School on Solar-Terrestrial Plasmas for UK and EU PhD students, 10-15 September 2017, Newcastle, UK
3. Joint UK-Ukraine_Spain (UKUS) meeting on Solar Physics and Space Science, 28/08-01/09/2017, Kiev, Ukraine (SOC member)
4. NAM2017 session on 'Particle acceleration and transport in solar flares and heliosphere', 05-12 July 2017, Hull, UK
5. COSPAR 2016 Assembly, session on 'Polarisation as a new window into the Universe', Istanbul, July 2016.
6. EGU 2016 meeting, organised a session on the upcoming grand solar minimum, Vienna, April 2016
7. COSPAR 2014 Assembly, session 'Energy release and transport in the solar atmosphere and the heliosphere', Moscow, July 2014
8. The fall 2011 American Geophysical Union (AGU), session on Particle acceleration and transport in heliosphere, Dec ' 2011, San Francisco, US
9. Spring AGU meeting 2010, session on Particle kinetics and dynamics in flaring atmospheres, May 2010.
10. Organised (with University of Glasgow, Warwick and Imperial College) and chaired the special 2 block-session on 'Particle acceleration and transport in the heliosphere' at the Joint European and National Astronomy meeting (JENAM) held in 19-23 April 2009 at the University of Hertfordshire.
11. Organised (with Dr. N.Vilmer) a special session at the spring meeting of the American Geophysical Union (AGU) 'Particle acceleration in the Sun and heliosphere', May 2008, (Fort Lauderdale, US).
12. Organised a special session at the spring AGU meeting (US) 'Particle acceleration and transport on the Sun and heliosphere', May 2007, (Acapulco, Mexico).
13. KES2006 – the Chair of a special session 'Intelligent paradigms in recognition and classification of solar and medical images', 12-14 October 2006, Bournemouth, UK
14. The Chair of the session 'Intelligent feature recognition in astrophysical and medical images', The 8th International Conference 'Knowledge-based Intelligent Information & Engineering Systems' (KES2004), 20-27 September 2004, Wellington Institute of Technology, New Zealand (see report on <http://www.cyber.brad.ac.uk/egso/KES2004/KES2004.html>)

Member of the Programme committee and Scientific Organising Committee (SOC):

15. Member of the SOC of the International conference on Statistical Physics (2026)
<http://sigmaphysrv.polito.it/index.php>
16. Alsatian Workshop on X-ray Polarimetry, 12-16/11/2017, Strasbourg, France (SOC member)
17. COSPAR 2016 meeting, session on polarisation of radiation, July 2016.
18. The first conference on Investigation of the Universe with polarisation methods 'A window about to open', Stockholm, June 2014.

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19. Fall AGU 2011 session on particle acceleration and transport in heliosphere, San Francisco, USA, December 2011.
20. KES International Conference in Agent and Multi-Agent Systems: Techniques and Applications 29 June – 1 July 2010, Manchester, UK.
21. World Congress in Engineering, July 2008, 2009, 2010, 2011.
22. The first Workshop ‘Solar Image Recognition’, 23-24 October ’03, Royal Belgium Observatory, Brussels, Belgium, a member of the Scientific Organising Committee (co-Chair, keynote speaker).
23. Member of the Program Committee for 2nd Symposium in Advances in Knowledge-based methods in Engineering and Technology, London, 2007-2009
24. The SOC member of the 10th international conference on the Knowledge-based Engineering Systems (KES) 2006, Oct ’06, Bournemouth, UK
25. The second Workshop ‘Solar Image Recognition’, 3-5 November ’04, Holiday Inn, Annapolis, USA a member of the Scientific Organising Committee.