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Educational Qualifications

Ph.D. (Electronics) awarded in Department of Physics and Electronics, BarkatullahUniversity, Bhopal, India in 2007.

M.Sc. (Electronics), First division (75.2%) from BarkatullahUniversity, Bhopal, India, 2000.

B.Sc. (Physics, Statistics and Mathematics), First division (79%) from Barkatullah University, Bhopal, India, 1998.

Awards/Honors conferred:

1. Certificate of Reviewing awarded February 2008 by Journal of Atmospheric and Solar Terrestrial Physics, Elsevier

2. 24th Young Scientist Award conferred by MP Council of Science and Technology in the year 2009 for best paper presentation.

3 Third Prize in Hindi Pakhwada organized at Regional Institute of Education, Bhopal

from 12-26 September, 2014 in Essay writing.

4. Outstanding Reviewer Award given by Advances in Space Research, Elsevier, Amsterdam, Netherlands, In cooperation with COMMITTEE ON SPACE RESEARCH (COSPAR), MAY 2015.

5. Certificate of Reviewing awarded February 2017 by Acta Astronautica, Elsevier

6. Certificate of Excellence in Reviewing in journal Advances of Research given by Science Domain International, 2018.

7. Certificate of Excellence in Reviewing in Physics Science International Journal given by Science Domain International, 2018.

8. Certificate of Reviewing awarded July 2019 by Physics of Earth and Planetary Interiors, Elsevier.

9. Certificate of Excellence in Reviewing in International Astronomy and Astrophysics Journal given by Science Domain International, 2019.

10. Young Scientist award for best paper presentation in 20th International Beacon Satellite Symposium, 19 – 23 August 2019, University of Warmia and Mazury, Olsztyn, Poland

Teaching Experience

1. Working as Assistant Professor in Physics at Regional Institute of Education, Bhopal since 20 February, 2014.

2. Guest lecturer at Department of Physics and Electronics, Barkatullah University, Bhopal from July 2012 to June 2013.

Research Skills and Experience

Operation of GPS (Global Positioning Satellite) receiver GSV 4004A, data processing and analysis for ionospheric studies.

Operation of CRABEX (Coherent Radio Beacon Experiment) receiver CBR-415, data processing and analysis for ionospheric studies.

Analysis of DEMETER satellite data for the study of ionospheric irregularities.

Analysis of Fluxgate Magnetometer data.

Analysis of Digital Ionosonde data.

Study of GPS receiver performance

Correlate the GPS receiver output and CRABEX receiver output.

Work on navigational area with the help of GPS.

GPS application in General Aviation (WAAS, GAGAN)

Computer Skills:

MS-Office, C, MATLAB and IDL (Interactive Data Language)

Technical Skills:

- ☒ Expertise in handling of GPS receiver GSV 4004A and CRABEX receiver CBR-415
- ☒ Working Knowledge of Data Acquisition & Analysis Systems

Brief Chronology of Employment:

1. Worked as research scholar and guest lecturer in Department of Electronics, Barkatullah University, Bhopal from August 2002 to May 2003.
2. Worked as Junior Research Fellow in the Indo French Project funded by the Indo French Centre for the Promotion of Advanced Research (IFCPAR), New Delhi under Prof. A.K. Gwal from May 2003 to April 2005.
3. Visiting fellow at LPCE/CNRS, Orleans, France to work on DEMETER satellite data and analysis from May 1, 2005 to June 30, 2005.
4. Worked as Senior Research Fellow in the Indo French funded by the Indo French Centre for the Promotion of Advanced Research (IFCPAR), New Delhi under Prof. A.K. Gwal from May 2005 to December 2006.
5. Worked as research associate awarded by CSIR New Delhi under the guidance of Prof. A.K. Gwal from April 2008-March 2009 in Department of Physics, Barkatullah University, Bhopal, India.
6. Worked as UGC-Dr. D.S. Kothari Postdoctoral fellow under the guidance of Prof. A.K. Gwal from July 2009-June 2012 in Department of Physics, Barkatullah University, Bhopal, India.

Reviewer of Journal

Journal of Atmospheric and Solar Terrestrial Physics

Advances in Space Research

International Journal of Remote Sensing

Natural Hazards

Indian Journal of Radio and Space Physics

Science Domain International

Research Projects

Block Level Research Project for Icchawar Block

(Cluster Assigned – Brijesh Nagar) PAC 16.12- As Member

Concurrent evaluation of art integrated learning program in Icchawar Block of Madhya Pradesh (PAC 16.58) – Co PI

iSTEAM Moon Over Us: Phases and Faces, Jan – Feb 2022 by Space Edge Academy – Team Member

Mid-term assessment of Implementing Interventions at school stage : A Block level Research Project PAC 23.03

Member

Learning gaps, challenges and Innovations in Primary Education during COVID period in western region (PAC 23.Additional)

Member

Seminars/Workshops/Training attended:

1. Three months training in B.H.E.L., Bhopal on study of motors and design of protection circuit.
2. Attended the **International Workshop on Earth System Processes Related to Gujarat earthquake using Space Technology** at Indian Institute of Technology Kanpur, India from January 27-29, 2003.
3. Attended the Scientific Engineering and Research Council (SERC) School organized by Department of Science and Technology at Benaras Hindu University, Varanasi on the topic **"Solar Terrestrial Environment and Space Weather"** from 1st-20th September 2003.
4. Attended the two day workshop on **"MATLAB & EMBEDDED TECHNOLOGY"** at University Institute of Technology, Barkatullah University, Bhopal from 8-9, August 2003.

5. Attended the Three-Day Intensive Course on **Global Positioning System and its Applications** at Research and Training Unit for Navigational Electronics, Osmania University, Hyderabad from 21st –23rd January 2004.
6. Attended the Scientific Engineering and Research Council (SERC) School organized by Department of Science and Technology at Research and Training Unit for Navigational Electronics, Osmania University, Hyderabad on the topic "**Basics of GPS and Ionosphere**" from 4th-24th August 2004. Grade obtained – Excellent.
7. Attended the **first DEMETER workshop** in CNES Paris from May 2-4, 2005.
8. Attended the **42nd annual convention and meeting of Indian Geophysical Union** on the topic "Earth system processes related to Earthquakes, Tsunamis and Volcanic Eruptions" organized by Barkatullah University Bhopal from December 7-9, 2005.
9. Attended the **XXVIII General Assembly of International Union Radio Science (URSI)**, New Delhi, 23-29 October 2005.
10. Attended the **International Workshop on Electromagnetic Studies Related to Earthquakes and Volcanoes**, Agra, November 20-22, 2006.
11. Attended the **second international symposium on Geo-information for Disaster Management**, 25-26 September, 2006, Goa.
12. Attended the **golden jubilee symposium on radio science** in National Physical Laboratory, New Delhi from February 21-24, 2007.
13. Attended the **24th M.P. Young Scientist Congress** at M.P. Council of Science & Technology, Bhopal from Feb 28-Mar 1, 2009.
14. Attended the **National Space Science Symposium** at Saurashtra University, Rajkot from February 23-28, 2010.
15. Attended the **International Workshop on Seismo-Electromagnetics and Atmospheric Science (IWSE-As 2010)**, 16-18 November 2010, Agra, India.
16. Attended the **International Conference on Recent Trends in Applied Sciences with Engineering Applications (RTASEA-2013)**, Truba Institute of Engineering and Information Technology, 26 to 28 April, 2013.
17. Attended the **Workshop on GNSS Data Application to Low Latitude Ionospheric Research** at ICTP, Trieste, Italy from 6-17 May, 2013.
18. Attended the **National Conference on New trends in Physics and Materials Science** held in Department of Physics, C.S.A. Govt. P.G. College, Sehore from 25-25, September, 2013.
19. Attended the **51st Refresher Course in Experimental Physics** at Department of Physics, Barkatullah University, Bhopal from Sep 16-30, 2013.
20. Attended the **Orientation Cum Refresher Course for NCERT faculty** from 01/05/2014 to 26/05/2014 at Department of Teacher Education, National Institute of Education, NCERT, New Delhi.
21. Attended the **Regional Meet on Science Education** organized by Regional Institute of Education on February 28, 2015.
22. Attended the **International conference on Emerging Interfaces of**

Plasma Science and Technology **EIPT-2015** from March 9-10, 2015 at Department of Physics, Vikram University, Ujjain.

23. Learning Physics Through Simple Experiments, Online Course organized by IIT Kanpur from 20/09/2016 to 20/11/2016
24. Attended the National Seminar on "Education for Sustainable Development" from October 21 to 23, 2016, at Regional Institute of Education, Bhopal
25. Attended the National Seminar on Innovative Practices In Teacher Education: Theory and Research from January 18-20, 2018 at Regional Institute of Education, Bhopal.
26. Attended the International Conference on Advances in Chemical Sciences and Allied Fields of Science, Health, Education & Environment organized at Career College Bhopal from 8-10 March 2018.
27. Attended the International Conference on Emerging Trends and Innovations in School Sciences at Regional Institute of Education, Bhopal from February 6-8, 2019.
28. Attended the 5th International Conference on Advances in Engineering, Pharmaceutical and Applied sciences organized at Sagar Institute of Research and Technology Bhopal from February 21-23, 2019.
29. Attended the National Seminar on ICT integration in Education and learning analytics at Regional Institute of Education, Bhopal from March 15-17, 2019.
30. Attended the 20th International Beacon Satellite Symposium , 19-23, August 2019 at University of Warmia and Mazury, Olsztyn, Poland
31. Attended the National Seminar on "Innovation and Integration in education of Modern School Sciences and Mathematics", 27-29 January, 2020
32. Attended the Virtual National Conference – 2020 on Physics & Environment (PE-2020), 30th April, organized by LNCT, Bhopal
33. Participated in Online Lecture on Wave Optics II by Prof. Rajaram Nityanand organized by IAPT on 11th July 2020.
34. Participated in one day National Webinar on Plasma Science and its Applications organized by UIT, Barkatullah University, Bhopal on 29th July 2020.
35. Participated in Online Lecture on Electrostatics I by Prof. H.S. Mani organized by IAPT on 18th July 2020.
36. Geoeffectiveness and TEC variability of the storm of March 2012, Presented at INCAIR2020 organized by Sagar Institute of Research and Technology, Bhopal on 22nd July 2020.
37. Solar Variability and Climate Change, Presented at E- international conference (ICIASEH-2020) organized by SIRTE Bhopal from July 29 to 30,

2020.

38. Participated in National Web Conference on NEP 2020 organised by RIE Bhopal from September 28-29, 2020.
39. Participated in 8th Annual Convention organised by IAPT on October 10 and 11, 2020 via zoom platform.
40. Assessing student performance in a Project Based learning environment presented at National Seminar on Emerging trends and Issues in Learners Assessment at School Level organised by RIE Bhopal from November 24-26, 2020.
41. Participated in Webinar series on 3D printing via online platform organized by Indian space industries exhibitors from December 11-13, 2020.
42. Bringing STEAM in the high school science classroom, presented at 9th National Conference on Mathematics education organized by RIE Bhopal from December 20 to 22, 2020.
43. Participated in India International Science Festival (IISF-2020) from December 22 to 25, 2020.

Papers presented at conferences:

1. Study of ionospheric perturbations with the help of DEMETER satellite
A.K.Gwal, KalpanaMalhotra, **ShivalikaSarkar** and M.Parrot

Presented at National Space Science Symposium (NSSS) 2004, Kottayam, India

2. GPS based method of ionospheric study
A.K.Gwal, **ShivalikaSarkar** and KalpanaMalhotra

Presented at the 35th COSPAR (Committee on Space Research) SCIENTIFIC ASSEMBLY AND ASSOCIATED EVENTS at Paris, France organized by International Union of RADIO SCIENCE (URSI) from 18th –24th July 2004.

3. Satellite based method to monitor Electromagnetic disturbances associated with earthquakes.

ShivalikaSarkar, KalpanaMalhotra and A.K.Gwal

Presented at 41st annual convention and meeting of Indian Geophysical Union on the topic "Inter and Intraplate Seismicity in India PRESENT KNOWLEDGE AND FUTURE STRTERGY" organized by National Geophysical Research Institute, Hyderabad from 29th –31st December, 2004.

4. Ionospheric effects on GPS signals
KalpanaMalhotra, **ShivalikaSarkar** and A.K.Gwal

Presented at 41st annual convention and meeting of Indian Geophysical Union on the topic "Inter and Intraplate Seismicity in India PRESENT KNOWLEDGE AND FUTURE STRTERGY" organized by National Geophysical Research Institute, Hyderabad from 29th –31st December, 2004.

5. Low latitude ionospheric variability observed by low earth orbiting satellites.

ShivalikaSarkar, A.K.Gwal and Neerja Sharma

Presented at the first DEMETER Guest Investigator workshop, Paris, May 2-4, 2005.

6. Analysis of ionospheric variability associated with a seismic event and a space weather event.

ShivalikaSarkar, A.K.Gwal and R.S.Dabas EP.23(0666)

Presented at the XXVIII General Assembly of International Union Radio Science (URSI), New Delhi, 23-29 October 2005.

7. Earthquake Precursors observed in the ionosphere by DEMETER satellite as electromagnetic emissions

ShivalikaSarkar, Shourabh Bhattacharya and A.K.Gwal

Presented at the second international symposium on Geo-information for Disaster Management, 25-26 September, 2006, Goa, ISSN: 1682-1777.

8. Ionospheric disturbances associated with strong earthquakes

ShivalikaSarkar, Shourabh Bhattacharya and A.K.Gwal,

Presented at the International Workshop on Electromagnetic Studies Related to Earthquakes and Volcanoes, Agra, November 20-22, 2006.

9. Ionospheric response to earthquakes in the mid latitude region

S.Sarkar, S.Bhattacharya, A.K.Gwal and M.Parrot

Presented at the golden jubilee symposium on radio science in National Physical Laboratory, New Delhi from February 21-24, 2007.

10. Satellite monitoring of anomalous effects in the ionosphere related with the great Wenchuan Earthquake of May 12, 2008.

S.Sarkar and A.K. Gwal

Presented at the forty sixth annual convention and meeting on 'Evolution of Himalayan foreland Basin and Emerging Exploration Challenges' organized by Indian Geophysical Union from 5-7 October, 2009 at Wadia Institute of Himalayan Geology, Dehradun.

11. Detection of Thermal Anomaly of AndamanIsland Earthquakes on August 10, 2009 through Remote Sensing Technique

SuryanshuChoudhary, **ShivalikaSarkar**, A.K. Gwal

Presented at the forty sixth annual convention and meeting on 'Evolution of Himalayan foreland Basin and Emerging Exploration Challenges' organized by Indian Geophysical Union from 5-7 October, 2009 at Wadia Institute of Himalayan Geology, Dehradun.

12. Seasonal variation of total electron content at crest of equatorial anomaly station during low solar activity conditions

ShivalikaSarkar,Shweta Mukherjee, P.K. Purohit and A.K.Gwal

Presented at the National Space Science Symposium at Saurashtra University, Rajkot from February 23-28, 2010.

13. Satellite monitoring of anomalous effects in the ionosphere related with the great Wenchuan Earthquake of May 12, 2008, **ShivalikaSarkar** and A.K. Gwal.

Presented at International Workshop on Seismo-Electromagnetics and Atmospheric Science (IWSE-As 2010), 16-18 November 2010, Agra, India.

14. Study of ionospheric variability during the storm of January,2005 using GPS and DEMETER satellite measurements, **ShivalikaSarkar**, AshaVishwakarma, SunitaTiwari and A.K. Gwal

Presented at the International Conference on Recent Trends in Applied Sciences with Engineering Applications (RTASEA-2013), Truba Institute of Engineering and Information Technology, 26 to 28 April, 2013.

15. Integrating GPS technology into the classroom, ShivalikaSarkar

Presented at Regional Meet on Science Education organized by Regional Institute of Education, Bhopal on February 28, 2015.

16. Plasma instabilities in the ionosphere at the crest of anomaly region, ShivalikaSarkar, SunitaTiwari and A.K. Gwal.

Presented at International conference on Emerging Interfaces of Plasma Science and Technology **EIPT-2015** from March 9-10, 2015 at Department of Physics, Vikram University, Ujjain.

17. Using GIS/GPS as a teaching tool, ShivalikaSarkar

Presented at National Seminar on Reflective Practices in Pedagogy-Technology Integration, 27-29 November, 2015 at Regional Institute of Education, Bhopal

18. Bringing ethical, legal and social aspects of upcoming technologies in the classroom, Shivalika Sarkar, Presented at National Seminar on "Education for Sustainable Development" from October 21 to 23, 2016, at Regional Institute of Education, Bhopal

19. Teaching and Learning Science through Toys and Games
Presented at National Seminar on Innovative Practices In Teacher Education: Theory and Research from January 18-20, 2018 at Regional Institute of Education, Bhopal

20. Role of technology in sustainable development and ELSA issues
Presented at International Conference on Advances in Chemical Sciences and Allied Fields of Science, Health, Education & Environment organized at Career College Bhopal from 8-10 March 2018.

21. A study about student's misconceptions on the concept of force in a constructivist learning environment: genesis and implications for curriculum development
Presented at International Conference on Emerging Trends and Innovations in School Sciences at Regional Institute of Education, Bhopal from February 6-8, 2019.

22. Science for Peace ethics and Value
Presented at International Conference on Emerging Trends and Innovations in School Sciences at Regional Institute of Education, Bhopal from February 6-8, 2019.

23. Plasma Instabilities in the ionosphere associated with the great magnetic storm of 2004, Presented at the 5th International Conference on Advances in Engineering, Pharmaceutical and Applied sciences organized at Sagar Institute of Research and Technology Bhopal from February 21-23, 2019.

24. Effectiveness of Integrating ICT in selected topics of science at the upper primary level
Presented at National Seminar on ICT integration in Education and learning analytics at Regional Institute of Education, Bhopal from March 15-17, 2019.

25. Statistical Analysis of Nighttime TEC Depletions and GPS Loss of Lock in the Crest of Anomaly Region
Presented at 20th International Beacon Satellite Symposium, 19-23, August 2019 at University of Warmia and Mazury, Olsztyn, Poland

26. A project based learning approach to promote STEM education in the

high school science classroom

Presented at National Seminar on "Innovation and Integration in education of Modern School Sciences and Mathematics", 27-29 January, 2020

27. EFFECTS OF GEOMAGNETIC STORMS ON THE IONOSPHERIC TEC VARIABILITY AT THE CREST OF EQUATORIAL IONIZATION ANOMALY STATION BHOPAL

Presented at Virtual National Conference – 2020 on Physics & Environment (PE-2020), 30th April, organized by LNCT, Bhopal

On the implementation of a STEAM Model in the high school science classroom, presented at the National Conference on "Integration of STEAM in School Education", organized by RIE Bhopal from February 26-28, 2021.

Teacher's Experience of Online teaching learning during COVID 19, presented at the National Conference on Teacher Education in 21st Century: Vision and Action organised by RIE Bhopal from March 8-10, 2021.

Study of geomagnetic storm effects in the low latitude region using GPS satellite, presented at International Conference on Interdisciplinary Approaches in Science (ICIASEH-2021) held from 29-30 July, 2021, SIRTE, Bhopal.

Study of space weather effects on the ionosphere for the 29th Solar Cycle using GPS technology, presented at Internal E-conference on "Exploration of New Horizon" (ICESTH-2021) from 29-30 October, 2021 at SIRT, Bhopal.

Participated in the 9th Annual Convention organized by IAPT on 9th & 10th October, 2021.

Participated in the Online Lecture organized by IAPT "Hidden Symmetry in Planetary Motion" on 10th July, 2021.

Participated in the Online Lecture organized by IAPT "Sealing and Power Laws in Natural Science and Beyond" on 17th July, 2021.

A Study of the Roles of Folk tales in Teaching concepts of Environment and Astronomy, Presented at National Conference on folk literature in Indian Languages, Today and Tomorrow, 27-29 January, 2022, RIE, Bhopal.

On the use of Video Based analysis and coding for solving problems in Mechanics organized National Conference of Emerging Trends in Physics & Physics Education, RIE, Ajmer, February 27-28, 2022.

Morphology of geomagnetic storms and their effects on total electron content in low latitude region presented at 3rd international conference (ICIASEH-2022) of SIRTE Bhopal from 29-30 July, 2022.

Innovative and Interdisciplinary pedagogues in Science presented at International Conference on Multidisciplinary Research perspectives (ICMRP) 2023 at BSSS college Bhopal from 16-17 Feb, 2023.

List of Publications

Papers inreviewd Journal:

1. Initial Plasma observations of DEMETER micro-satellite. A.K.Gwal, **ShivalikaSarkar**, KalpanaMalhotra, Michel Parrot,JURNAL FIZIK MALAYSIA, 27(2), 51-57, (2006).
2. Observations of ULF/ELF anomalies detected by DEMETER satellite prior to earthquakes, S. Bhattacharya, **S. Sarkar**, A K Gwal& M Parrot, Indian Journal of Radio and Space Physics, Vol. 36, 103-113, (2007).
3. Satellite and Ground Based ULF/ELF emissions observed before Gujarat Earthquake in March 2006, S. Bhattacharya, **S. Sarkar**, A.K.Gwal and M. Parrot, Current Science, Vol. 93 No. 1, 41-46, (2007).
4. Ionospheric variations observed by the DEMETER satellite in the mid latitude region during strong earthquakes, **S. Sarkar**, A K Gwal and M Parrot, Journal of Atmospheric and Solar Terrestrial Physics, 69, 1524-1540, doi:10.1016/j.jastp.2007.06.006, (2007).
5. Study of ULF/ELF Perturbations Associated with Earthquakes, S. Bhattacharya, **S. Sarkar**, A K Gwal and M Parrot, Electromagnetic Phenomena related to Earthquakes and Volcanoes, Birbal Singh (Ed.), Narosa Publishing House, 41-47, (2008).
6. Electric and magnetic field perturbations recorded by DEMETER Satellite before seismic Events of 17th July 2006 M 7.7 Earthquake in Indonesia, S. Bhattacharya, **S. Sarkar**, A. K.Gwal and M Parrot, Journal of Asian Earth Sciences 34, 634-644, (2009).
7. Study of ionospheric variability during geomagnetic storms, Rakhee Malik, **ShivalikaSarkar**, Shweta Mukherjee and A.K. Gwal, Journal of Indian Geophysical Union 13(4), 237-245, (2010).
8. Seasonal variation of total electron content at crest of equatorial anomaly station during low solar activity conditions, Shweta Mukherjee, **ShivalikaSarkar**, P.K. Purohit and A.K.Gwal, Advances in Space Research, 46, 291-295, (2010).
9. Satellite monitoring of anomalous effects in the ionosphere related to the great Wenchuan earthquake of May 12, 2008, **ShivalikaSarkar**and A.K.Gwal, Natural Hazards, 55: 321-332, DOI 10.1007/s11069-010-9530-9, (2010).
10. Effect of Geomagnetic Storms in the Equatorial Anomaly Region observed from ground based data, Shweta Mukherjee, **ShivalikaSarkar**, P.K.Purohit, A.K.Gwal, International Journal Of Geomatics And Geosciences, Volume 1, No 3,

477-488, (2010).09764380

11. Electron density anomalies associated with $M \geq 5.9$ earthquakes in Indonesia during 2005 observed by DEMETER, **ShivalikaSarkar**, SunitaTiwari and A.K. Gwal, Journal of Atmospheric and Solar Terrestrial Physics, 73, 2289-2299, (2011).13646826 Elsevier
12. Analysis of GPS based TEC and electron density by DEMETER satellite before Sumatra earthquake on September 30, 2009, SheetalKaria, **ShivalikaSarkar** and KamleshPathak, International Journal of Remote Sensing, 33:16, 5119-5134, (2012).2319-3484 Taylor and Francis, UK
13. Ionospheric anomalies associated with the Haiti earthquake of 12 January 2010 observed by DEMETER satellite, **S. Sarkar**, S. Choudhary, A. Sonakia, A. Vishwakarma, and A. K. Gwal, Natural Hazards and Earth System Science, 12,671-678, (2012). Copernicus publication GermanyISSN 1684-9981 IF 2.277
14. Ionospheric irregularities at Antarctic using GPSmeasurements, SunitaTiwari, Amit Jain, **ShivalikaSarkar**, Sudhir Jain and A K Gwal, Journal of Earth System Science, 121, 2, 345-353, (2012). Springer India0253-4126 IF 0.858
15. Study of GPS Ionospheric Scintillations Over EquatorialAnomaly Station Bhopal, Shweta Mukherjee, ShivalikaSarkar, P.K. Purohit and A.K.GwalInternational Journal of Advances in Earth Sciences, Volume 1, Issue 2, 2012, 39-48.Research Publishing Group ISSN No. : 2278-0092
16. 16. Study of ionospheric variability during the storm of January,2005using GPS and DEMETER satellite measurements, **ShivalikaSarkar**, AshaVishwakarma, SunitaTiwari and A.K. Gwal, Advances inPhysics Theories and Applications, Vol. 19, pages 118-121, 2013.IISTE2225-0638
17. Effect of Magnetic activity on scintillation at Equatorial Regionduring Low Solar activity, SunitaTiwari, **ShivalikaSarkar**, AshaVishwakarma and A. K. Gwal, Advances in Physics Theories andApplications, Vol. 19, pages 118-121, 2013.IISTE2225-0638
18. Analysis of space and ground based parameters prior to an earthquake on 12 December 2009,SheetalKaria, **ShivalikaSarkar**, KamleshPathak, Ashok Kumar Sharma, HaridasRanganath and Ashok Kumar Gwal, International Journal of Remote Sensing, Vol 34, No. 21, 7779-7795, doi 10.1080/01431161.2013.827341

19. Coordinated in situ measurements of plasma irregularities and ground based scintillation observations at the crest of equatorial anomaly, **ShivalikaSarkar** and A.K. Gwal, *Advances in Space Research* 54 (2014) 425–434, doi 10.1016/j.asr.2014.01.023 ElsevierAmsterdam, Netherlands0273-1177
20. GPS Based Study of Ionospheric Variability in TEC at Low Latitude Station Bhopal KalpanaMaski, **ShivalikaSarkar**, S. K. Vijay, S. K. Jain, A. K. Gwal, *International Journal of Emerging Technology and Advanced Engineering*, Volume 5, Issue 6, June 2015, 104-108, ISSN : 2250 – 2459, IJAET
21. Plasma instabilities in the ionosphere at the crest of anomaly region ShivalikaSarkar, SunitaTiwari, and A. K. Gwal, *AIP Conference Proceedings* 1670, 030022 (2015); doi: 10.1063/1.4926706
22. Using GIS and GPS Technology as Teaching Tool , ShivalikaSarkar, *Research Tracks*, Volume III, Issue II, July 2016, doi : 10.22183/23474637, 129-130 Ganesh Pundlikrao Khandare, 2347-4637
23. Bringing Ethical, Legal and Social Aspects of Innovative Technologies in the Classroom, ShivalikaSarkar, ShivalikaSarkar, *Research Demagogue*, Volume III, Issue I, October 2016, doi 10.22183/23501081, 23-24, 2350-1081
24. Effectiveness of Constructivist Approach Based Experiments on student's achievement in selected topics of Physics, ShivalikaSarkar, *Research Dimensions*, Vol. 3, Issues 8, October 2017, pp. 80-85.
25. Statistical Analysis of Nighttime TEC Depletions and GPS Loss of Lock in the Crest of Anomaly Region ShivalikaSarkar and A. K. Gwal, *International Journal of Theoretical & Applied Sciences*, 9(2): 242-253(2017)
26. Response of low latitude ionosphere to the space weather event of November, 2012 in the Asian Sector, ShivalikaSarkar and A. K. Gwal, *Indian Journal of Radio and Space Physics*, accepted for publication, 2019.
27. Effectiveness of Constructivist Approach on Student's Achievement in Selected Topics of Science at Secondary Level, ShivalikaSarkar, *Review of Research*, Vol. 8, Issue 5, February 2019
28. An investigation about student's misconception on the concept of force in a constructivist learning environment, *Review of Research*, ShivalikaSarkar ,Vol. 8, Issue 5, May 2019.
29. Teacher's Experiences of Online Teaching During COVID-19 Pandemic and E-Moderation, ShivalikaSarkar, *United International Journal for research and Technology*,

Vol 2, ISSUE 5, 2021

30. On using a STEAM project-based learning model for secondary school students: Design, Development and Evaluation, ShivalikaSarkar, School Science, Vol. 58(1), March 2020, ISSN 0036-679X (print).

31. Future Trends in Educational Technology, Published in Innovative Technology in Teacher Education , Edited by Dr. T. Manichander, Lulu Publication, 2020, ISBN – 978-1-67803-318-

32. On the implementation of a STEAM model in the high school science classroom, RIE, Bhopal Journal of Education, Vol.-4, Issue-II, January-June, 2021.

33. A Study of Teacher's Perception on Art Integrated in Ichhawar Block of Sehore District, RIE, Bhopal, Journal of Education, Vol.-5, Issue-I, July-December, 2021.

34. Video Based Analysis using tracker software for solving problems in Mechanics, ShivalikaSarkar, Resonance Journal of Science Education, Vol. 27(9), 2022

35. On the use of video based analysis and coding for solving problem in mechanics, Educational Trends a journal of RIE, NCERT, Ajmer, Vol. 4(1), Jan 2023.

Papers in Proceeding:

1. Ionospheric Effects on GPS Signals.

A.K.Gwal, KalpanaMalhotra and **ShivalikaSarkar**

Proceedings of Emerging Trends in Electronics, Electro 2005 BanarasHinduUniversity, Varanasi, 3-5 Feb, 2005.

2. Analysis of ionospheric variability associated with a seismic event and a space weather event.

ShivalikaSarkar, A.K.Gwal and R.S.Dabas EP.23(0666)

Proceedings of XXVIII General Assembly of International Union Radio Science (URSI) , New Delhi, 23-29 October 2005.

3. Nighttime increase in total electron content observed by GPS at low latitude stationBhopal

SainiShailendra, KalpanaMalhotra, **ShivalikaSarkar** and AnuragGwal GF1a.7 (01409)

Proceedings of XXVIII General Assembly of International Union Radio Science (URSI) , New Delhi, 23-29 October 2005.

4. Variation of electron density above India observed by DEMETER micro-satellite and the CRABEX project

A.K.Gwal, M.Parrot, J.L.Pincon, J.P.Lebreton, A.Trigunait, **ShivalikaSarkar**, KalpanaMalhotra and Neerja Sharma.

Proceedings of XXVIII General Assembly of International Union Radio Science (URSI) , New Delhi, 23-29 October 2005.

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Declaration:

I hereby declare that all the information provided above is true to the best of my knowledge.

A handwritten signature in black ink, reading "Shivalika Sarkar". The script is cursive and fluid, with the first name "Shivalika" and the last name "Sarkar" clearly distinguishable.

Date:19/05/2020SHIVALIKA SARKAR