

Arun Kumar Awasthi

Curriculum Vitae

Institute of Astronomy
University of Wrocław (IAUWR)
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Education

- October, 2014 - **Post-Doctoral Fellow**, Institute of Astronomy, University of Wrocław (IAUWR), Wrocław, Poland, Poland.
ongoing **Topic-** *"Diagnostics of Solar Chromosphere during Flares"*
Host- Dr. Arkadiusz Berlicki
- April, 2014 - **Post-Doctoral Fellow**, Aryabhata Research Institute of Observational Sciences (ARIES), Nainital, India, India.
September, 2014 **Topic-** *"Solar Flares"*
Host- Dr. Wahab Uddin
- December, 2013 - April, 2014 **Post-Doctoral Fellow**, Physical Research Laboratory, Gujarat, India, India.
Topic- *"Solar Flares"*
Host- Prof. P. Janardhan
- August, 2008 **Ph.D.**, Physical Research Laboratory, Gujarat, India, India.
- December, 2013 **Thesis Title-** *"Energy release processes in Solar Flares"*
Supervisor- Prof. Rajmal Jain
- 2006–2008 **MSc in Physics**, University of Allahabad, Allahabad, India, 80.94%.
First Class with Honors
Specialized in Condensed Matter Physics
- 2003–2006 **BSc in Physics, Mathematics & Chemistry**, University of Allahabad, Allahabad, India, 75.50%.
First Class with honors
Specialized in Physics & Mathematics
- 2001-2003 **Senior Secondary**, F.A.A.G.I.C., Gonda, Uttar Pradesh, India, 80.20%.
First Class with honors
Subjects- Physics, Mathematics, Chemistry, English & Hindi
- 1999-2001 **Higher Secondary**, S.V.M.H.S.S., Gonda, Uttar Pradesh, India, 77.17%.
First Class with honors
Subjects- Science, Mathematics, English, Hindi, S. Science & Sanskrit

Research/Work Experience

Title *Energy release processes in Solar flares*

Description During PhD, I investigated Energy release processes in solar flares. Specifically, the underlying cause of precursor emission and its association to the main phase emission, characterization of heating and cooling of the flaring plasma, flare-CME relationship and self-organization of corona using observed photosphere and coronal emissions have been explored. Major outcomes of the investigations include the thermal conduction causing the precursor emission and active role of the filament, multi-thermal plasma during the main phase emission and simultaneous onset of flare and CME phenomenon explained by inner tether-cutting model. These outcomes are published in the form of 3 major publications. Further, during PhD, I have also been involved in the instrumentation in installing and proper operation of an H α solar telescope. In addition, I have also prepared a number of softwares mainly in IDL, MATLAB and Visual Basics.

Research Interest/Future Plan

I am strongly interested in proposing/refining/augmenting the underlying physical processes of energy release during solar eruptions *viz.* flares and CMEs based on observational evidences and numerical modeling.

Publications

Referred Journals:

- **Awasthi, A. K.**; Jain, R., Gadhiya, P. D., Aschwanden, M. J.; Uddin, W.; Srivastava, A. K.; Chandra, R.; Gopalswamy, N.; Nitta, N. V.; Yashiro, S.; Manoharan, P. K.; Choudhary, D. P.; Joshi, N. C.; Dwivedi, V. C.; Mahalakshmi, K., "*Multi-wavelength Dignostics of the Precursor and Main phases in M1.8 flare on 2011 April 22*", **MNRAS**, 2013, In Press, DOI: 10.1093/mnras/stt2032.
- Choudhary, P.; Jain, R.; **Awasthi, A. K.**, "*Periodicities in the X-ray Emission from the Solar Corona*", **Astrophysical Journal**, 2013, 778, 28.
- Bhatt, N. J.; Jain, R.; **Awasthi, A. K.**, "*The energetic relationship among geoeffective solar flares, associated CMEs and SEPs*", **Research in Astronomy and Astrophysics**, 2013, 13, 8, 978-990.
- Choudhary, D. P.; Gosain, S.; Gopalswamy, N.; Manoharan, P. K.; Chandra, R.; Uddin, W.; Srivastava, A. K.; Yashiro, S.; Joshi, N. C.; Kayshap, P.; Dwivedi, V. C.; Mahalakshmi, K.; Elamathi, E.; Norris, M.; **Awasthi, A. K.**; Jain, R. , "*Flux emergence, flux imbalance, magnetic free energy and solar flares*", **Advances in Space Research**, 2013, 52, 8, 1561-1566.

- Joshi, N. C.; Uddin, W.; Srivastava, A. K.; Chandra, R.; Gopalswamy, N.; Manoharan, P. K.; Aschwanden, M. J.; Choudhary, D. P.; Jain, R.; Nitta, N. V.; Xie, H.; Yashiro, S.; Akiyama, S.; Makela, P.; Kayshap, P.; **Awasthi, A. K.**; Dwivedi, V. C.; Mahalakshmi, K., "*A multiwavelength study of eruptive events on January 23, 2012 associated with a major solar energetic particle event*", **Advances in Space Research**, 2013, 52, 1, 1-14.
- Gopalswamy, N.; Xie, H.; Makela, P.; Yashiro, S.; Akiyama, S.; Uddin, W.; Srivastava, A. K.; Joshi, N. C.; Chandra, R.; Manoharan, P. K.; Mahalakshmi, K.; Dwivedi, V. C.; Jain, R.; **Awasthi, A. K.**; Nitta, N. V.; Aschwanden, M. J.; Choudhary, D. P., "*Height of shock formation in the solar corona inferred from observations of type II radio bursts and coronal mass ejections*", **Advances in Space Research**, 2013, 51, 11, 1981-1989.
- Jain, R.; **Awasthi, A. K.**; Tripathi, S.C.; Bhatt, N. J.; Khan, P.A., "*Influence of solar flare X-rays on the habitability on the Mars*", **ICARUS**, 2012, 220, 2, 889-895.
- Jain, R.; **Awasthi, A. K.**; Chandel, B.; Bharti, L.; Hanaoka, Y.; Kiplinger, A. L., "*Probing the Role of Magnetic-Field Variations in NOAA AR 8038 in Producing a Solar Flare and CME on 12 May 1997*", **Solar Physics**, 2011, 271, 1-2, 57-74.
- Jain, R.; **Awasthi, A. K.**; Rajpurohit, A. S.; Aschwanden, M. J., "*Energy-Dependent Timing of Thermal Emission in Solar Flares*", **Solar Physics**, 2011, 270, 1, 137-149.

Conference Proceedings:

- **Awasthi, A. K.** & Jain, R., "*Probing the Solar origin of energy build-up and release in Solar Energetic Particles*", **Solar and Astrophysical Dynamos and Magnetic Activity, Proceedings of the International Astronomical Union, IAU Symposium**, 2012, 294, 539-540.
- **Awasthi, A. K.** & Jain, R., "*Generalization of the Neupert effect over the Solar Flare Plasma Cooling*", **Solar and Astrophysical Dynamos and Magnetic Activity, Proceedings of the International Astronomical Union, IAU Symposium**, 2012, 294, 541-542.
- Jain, R.; **Awasthi, A. K.**, "*Energy-dependent nature of thermal emission in solar flares*", **BASI, Conference Series**, 2011, 3, 101.
- **Awasthi, A. K.**; Jain, R., "*Multi-wavelength Dignostics of Precursor phase emission in Solar Flares*", **BASI, Conference Series**, 2011, 3, 297-305.

- Jain, R.; Rajpurohit, A. S.; Aggarwal, M.; Jamwal, R.; Awasthi, A. K., "*Time-Varying Thermal Emission in Solar Flares*", *Astrophysics and Space Science Proceedings*, 2010, 465-470

Seminars/Conferences/Schools

- 2012 (Presentation): "*International Astronomical Union*" held at Beijing, China during August 26–September 7, 2012 and presented two papers entitled "**Generalization of Neupert effect over the Solar are plasma cooling**" and "**Probing the solar origin of energy build-up and release in solar energetic particles**".
- 2012 (Seminar): "*Solar Physics Division, National Astronomical Observatory of China*" Beijing, China entitled "**Precursor phase emission in Solar Flares**"
- 2012 (Poster Presentation): "*National Space Science Symposium*" held at Tirupati, Andhra Pradesh, India during 13–17 February 2012, and presented a poster on "**Generalization of Neupert effect over Solar flare plasma cooling**". **This presentation received second best poster award.**
- 2012 (Paper Presentation): "*COSPAR General Assembly - 2012*" held at Mysore, India during 14–22 July 2012, and presented a paper entitled "**Thermal and Non-thermal characteristics of an M1.8 flare occurred on April 22, 2011**".
- 2012 (Paper Presentation): "*COSPAR General Assembly - 2012*" held at Mysore, India, during 14–22 July 2012, and presented a paper entitled "**Influence of Solar Flare X-rays on the habitability on the Mars**".
- 2012 (Winter School): "*GUAS-Asian Solar Physics winter School*" held at National Astronomical Observatory of Japan (NAOJ), Mitaka, Japan during January 23– February 4, 2012 and gave a division seminar.
- 2011 (Paper Presentation): "*The Solar Radio Workshop*" held at Department of Electronic Science, University of Pune, Pune during 23–25 November, 2011 and presented a paper on "**Multi-wavelength diagnostics of precursor phase in Solar flares**".
- 2011 (Poster Presentation): "*1st Asia-Pacific Solar Physics Meeting & 3rd Indo-China Workshop on Solar Physics*" organized by Indian Institute of Astrophysics, Bangalore during March 21–24, 2011 and presented a poster on "**Multi-wavelength study of Precursor phase emission in Solar flares**".

- 2010 (Local Organizer): "*Young Astronomers Meet-2011*" held in Physical Research Laboratory, Ahmedabad during September 3–5, 2010.
- 2010 (SERC School): "*Atomic & Molecular Spectroscopy*" held in Physical Research Laboratory, Ahmedabad during April 5–20, 2010.
- 2010 (Paper Presentation): "*16th National Space Science Symposium*" organized by Indian Space Research Organization (ISRO) at Sourashtra University, Gujarat, India held during February 24–27, 2010 and presented a paper on "**Chromospheric evaporation & Neupert effect in Solar flares**".
- 2009: "*Young Astronomers Meet-2010*" held in Indian Institute of Technology, Kharagpur during March 13-15, 2009.

COMPETITIVE EXAMS & FELLOWSHIPS

- 2008-2013 Research Fellowship at Physical Research Laboratory (PRL)
 - 2009 Qualified Graduate Aptitude Test in Engineering (GATE); Percentile - 97.32; All India Rank - 250
 - 2008 Qualified Joint Entrance Screening Test (JEST); Percentile - 92.32
- June, 2008 Qualified for CSIR - NET (Eligibility for Lecturership)
 - 2008 Qualified GATE; All India Rank - 641
 - 2007 Qualified JEST; Percentile - 97.1; All India Rank - 121
 - 2006 Qualified National Graduate Physics Examination (NGPE)

AWARDS/Grants Received

- 2013 Awarded "*Life time membership*" of Astronomical Society of India (ASI)
- 2012 Received "*Travel Grant*" for attending International Astronomical Union-2012, Beijing, China.
- 2012 Received "*Travel Grant*" for attending COSPAR General Assembly-2012, Mysore, India.
- 2012 Received "*Travel Grant*" for attending GUAS Winter School, NAOJ, Japan.
- 2008 Received "*Prof. G. S. Verma Gold Medal*" for securing highest marks in M.Sc. Condensed matter physics specialization.
- 2007 Received "*Rajendra Singh Award*" for securing highest marks in Physics in M.Sc. First Year.
- 2006 Received "*Meghnad Saha Centenary Gold Medal*" for securing highest marks in Physics subject in B.Sc.

Date: March 12, 2015
Place: Wroclaw, Poland

Arun Kumar Awasthi