



Prachi Sharma

Field of research:

Nonlinearity and Turbulence in plasmas

Name of institute:

Indian Institute of Technology Delhi, India

Pursuing degree:

Ph.D.

Completed degree (in descending order):

2008-2010 M.Sc. Physics Dr. B. R. A. University Agra, India

2005-2008 B.Sc (PCM) Dr. B. R. A. University Agra, India

2004–2005 Intermediate Examination U.P. Board

2002-2003 High School Examination U.P. Board

Publications (in descending order):

1. " Nonlinear evolution of 3-D Inertial Alfvén Wave and its implication in particle Acceleration" by *Prachi Sharma, N. Yadav and R. P. Sharma (2016) Solar Physics (accepted)*

2. "Study of nonlinear 3-D evolution of kinetic Alfvén wave and fluctuation spectra" by *Prachi Sharma, N. Yadav, and R. P. Sharma (2015) Astrophys Space Sci, 360:18 DOI 10.1007/s10509-015-2531-0*

3. "Localization of 3D inertial Alfvén wave and generation of turbulence" by *R. P. Sharma, Prachi Sharma and N. Yadav (2015) Astrophys Space Sci, 357:110 DOI 10.1007/s10509-015-2338-z*

4. "Nonlinear interaction of 3-D kinetic Alfvén wave and fast magnetosonic wave" by *Prachi Sharma, N. Yadav, and R. P. Sharma (2014) J. Geophys. Res. Space Physics, 119, 6569–6576, doi:10.1002/2014JA020098*.

Poster presentations (in descending order):

- Presented poster (entitled " Role Of 3D Kinetic Alfvén Wave In Coronal Heating") in " 30th National Symposium on Plasma Science & Technology (PLASMA-2015)" Saha Institute of Nuclear Physics, Kolkata, India held on 1-4 December, 2015.

- Best Poster Award (entitled "Localization and Turbulent Spectrum Of 3-D Inertial Alfvén Wave in Low Beta Plasma") in "29TH NATIONAL SYMPOSIUM ON PLASMA SCIENCE & TECHNOLOGY & INTERNATIONAL CONFERENCE ON PLASMA AND NANOTECHNOLOGY" Mahatma Gandhi University, Kottayam, Kerala, India held on 8-11 December, 2014.

Schools/Workshops Attended (in descending order):

- CCMC Spaceweather Concepts and Tools (2016).

- DST-SERB-2014 (High intensity laser plasma interaction: Theory and Simulations), Indian Institute of Technology Delhi, India held on 05-23 May, 2014.

Purpose of study in the research field (in 1000 words):

To understand the wave propagation in ionospheric plasma, Research has been started in early 1930's. Hannes Alfvén discovered a wave known as Alfvén wave brought the huge excitement in the research of astrophysical plasma in 1940.

My research topic is nonlinearity and turbulence in plasmas. Nonlinearities and turbulence play a very crucial role in different regions of space plasmas like solar wind, corona, geospace etc. The main objective of my research is to study the various nonlinear wave-wave interactions and try to understand physics behind the mechanism. The major part of my research deals with the understanding of the generation of turbulence in different space regions and scaling laws in the observed range. Space is an infinite medium of plasmas and offers promising regions to study the turbulence. Therefore I am trying to understand the nonlinear coupling between different modes of waves and find out turbulent cascading of energy and their scaling laws. My research work mainly presents the localization/filamentation of the waves. Dispersion of the wave is an essential property for the coupling of the magnetosphere to the ionosphere so the interaction of kinetic Alfvén wave/inertial Alfvén wave with various low frequency waves like fast magnetosonic wave, slow magnetosonic wave, ion acoustic wave have been investigated.

Other details:

Awards & Honour (i.e.NET/SLAT/JEST/GATE/Any equivalent):

1. Graduate Aptitude Test in Engineering (GATE) 2012 (All India Rank 44)
2. CSIR Junior Research Fellowship (JRF) 2012 (All India Rank 55)

Language Skill

Hindi, English

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As mentioned on ccmc.gsfc.nasa.gov/staff/krishnarao.php

Prachi is a senior research fellow at Indian Institute of Technology Delhi, India pursuing PhD in plasma physics. She is trying to study the different aspects of turbulence in different regions of space via numerical techniques. She deals with different kind of waves presenting in the space.

Her research mainly focuses on the particle acceleration and heating in the different space regime like magnetopause, aurora, corona etc. Her work deals with the analytical approach as well as simulation technique. She is using FORTRAN to simulate the dynamical equations and MATLAB for plotting purpose.

Apart from this she is currently start working on coronal heating mechanism by wave-wave interaction.