

YIFAN HUANG, Ph.D. | Curriculum Vitae

| Email: huangyifan@lanl.gov

EDUCATION

Ph.D. Space Physics, University of Massachusetts Lowell (UML).

M.S. Physics and Applied Physics, University of Massachusetts Lowell (UML).

B.S. Theoretical and Applied Mechanics, Univ. of Sci. and Tech. of China (USTC).

RESEARCH EXPERIENCE

Research Assistant Advisor: Prof. Paul Song, Dept. of Physics, UML 2015 - 2021

1. Alfvén wave propagation in a 1-D stratified partially ionized medium

Conducted theoretical analysis for propagation of long-wavelength wave in ionosphere where the propagating direction and wavelength are continuously varied.

2. MHD Wave Propagation at the Interface Between Solar Chromosphere and Corona

Conducted theoretical analysis in properties of wave modes when plane waves propagating across the interface of discontinuity.

3. Parallel propagation and damping of electromagnetic waves in a partially ionized plasma with multiple species

A more general fluid-approaching model was provided to include multiple species and collisions among them. A general dispersion relation was derived for wave propagation along magnetic field in a collisional plasma containing arbitrary number of species, including neutral species, in linear approximation.

4. Simulation of Global Plasma Transportation using Dynamic Fluid-Kinetic (DyFK) model

Designed a parallel computational simulation model for global plasma transportation, expanded from a Fortran code of Dynamic Fluid-Kinetic (DyFK) model for single flux tube.

5. A New Global Semi-Kinetic Simulation Model of Coupled Inner Magnetosphere-Ionosphere

Design a new global semi-kinetic simulation model based on C++. This model for the first time fills the gap between global ionosphere models and global magnetosphere models, and of potential in studying magnetosphere-ionosphere coupling, in terms of mass, energy, and momentum exchange.

PUBLICATIONS

Huang, Y., Tu, J. and Song, P., 2018. Parallel propagation and damping of electromagnetic waves in a partially ionized plasma with multiple species. *Physics of Plasmas*, 25(12), p.122101.

PRESENTATIONS

2019 American Geophysical Union (AGU), *A New Global Semi-Kinetic Simulation Model of Coupled Inner Magnetosphere-Ionosphere*

2018 American Geophysical Union (AGU), *Simulation of Global Plasma Transportation using Dynamic Fluid-Kinetic (DyFK) Model*

2017 American Geophysical Union (AGU), *Collision Effects on the Field-Aligned Propagation from the Magnetosphere to the Ionosphere*

2016 American Geophysical Union (AGU), *Parallel Propagation of Electromagnetic Waves in a Partially Ionized Plasma with Multiple Species*

HONORS & AWARDS

Outstanding Graduate Student in Physics Department, UML	2019
The Provost Scholarship, UML	2013