

➤ Venue

Korea Astronomy and Space Science Institute, Daejeon, 장영실홀 331-2호

➤ Dates

11 – 12 February 2019

➤ Scope and Motivation

The space plasma physics is known to be at the crossroads of multidisciplinary research approaches. From developing sophisticated instruments for exploring unknown space environments to building and improving theory and numerical modeling to interpret new datasets from those instruments, instrumentation, data analysis, and theory/modeling have grown together. Above all, the growth of the numerical simulations has been remarkable during the last two decades, thanks to the development of innovative numerical techniques and the availability of fast and inexpensive computational resource. The numerical simulations have now become an inevitable research tool for the space plasma physics community, especially when the underlying problem is intractable with an analytic approach.

Despite the importance, theory/modeling in the field of Korean space plasma physics is still in its infancy. So, it is time to bring the experts together and discuss where we are at now and how we should proceed as community members. This workshop is intended to be the first step toward disseminating information and knowledge relevant to theory/numerical modeling and facilitating collaboration among the researchers in our scientific community.

The major goal of this workshop is to 1) introduce various numerical simulations commonly used in solar and space environments; 2) review the current status and community interest relevant to space plasma simulation and its application to scientific subject; 3) foster future collaborations among the researchers in the Korean space scientific community. In addition, the workshop is geared toward generating interests among young researcher and students in the numerical simulations used in the field of space plasma physics and providing them with “tutorial”-level resources from which they can extend both their knowledge and overall understanding in a broad range of scientific issue.

This workshop will consist of tutorial sessions on various types of plasma simulation models including: particle-in-cell (PIC), hybrid (kinetic ions/massless fluid electrons), test particle, and magneto-hydrodynamics (MHD) simulations, as well as review and invited talks on space plasma physics research. The lectures and talks presented during the workshop will be kept at an entry level.

Program

✓ Day 1

13:00 – 13:30 Registration & Reception

13:30 – 13:40 Opening remark: schedule & content of workshop

13:40 – 14:10 Talk1: An overview of space plasma simulation (서정준)

14:10 – 15:10 Lecture1: Introduction to Particle-In-Cell simulation and its application (이상윤)

15:10 – 15:30 Coffee Break

15:30 – 16:30 Lecture2: Hybrid (kinetic ions/massless fluid electrons) simulation (민경국)

16:30 – 17:30 Talk2: Kinetic physics in space plasma (피터 윤)

17:30 – 17:40 Announcement

17:40 - Dinner

✓ Day 2

09:30 – 10:30 Lecture3: The plasma sheet-ring current-radiation belt coupling:
Key physics and selected simulation model (이대영)

10:30 – 11:30 Lecture4: Global modeling of the Earth's radiation belt (김경찬)

11:30 – 13:00 Lunch Break

13:00 – 14:00 Talk3: Proton and electron acceleration at low Mach, high beta
collisionless shocks (하지훈)

14:00 – 15:00 Lecture5: MHD simulation and its application 1 – Magnetosphere (박경선)

15:00 – 15:20 Coffee Break

15:20 – 16:20 Talk4: MHD simulation and its application 2 – The Sun (이환희)

16:20 – 16:30 Announcement

➤ Contact

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