PEM021-P06　　　　　会場:コンベンションホール　　　　　時間: 5月24日17:15-18:45

ＧＥＭＳＩＳ－Ｓun:　太陽フレアにおける粒子加速機構の理解に向けて

GEMSIS-Sun: Toward the understanding of particle acceleration mechanisms in solar flares

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GEMSIS (Geospace Environment Modeling System for Integrated Studies; http://st4a.stelab. nagoya-u.ac.jp/gemsis) of STEL, Nagoya University, is the modeling project for understanding energy and mass transportation from the Sun to the Earth in the geospace environment. Phase 1 of the GEMSIS project (FY2007-2009) focuses on understanding the high-energy particle environment in geospace and developing basic technologies for geospace modeling. One of the main subjects of Phase 1 is 'generation and acceleration process of energetic particles in geospace '. GEMSIS-Sun is one of the working teams of the GEMSIS project. In Phase 1, the main goal of GEMSIS-Sun is to understand particle acceleration mechanisms in solar flares, through development of a numerical model of energetic particles and data analysis of space- and ground-based observations. Specifically the following three types of researches were carried out; (1) We developed a modeling code to understand the dynamics (acceleration/transport) of high-energy particles in solar flares based on the drift-kinetic Vlasov equation. This method is quite new and unique. Details are described in the Minoshima et al. paper in this meeting. (2) We also developed a modeling method of reconstruction of the coronal magnetic field using the observational photospheric magnetic field data taken with Hinode/SOT as a boundary condition. This research topic is not directly related with particle acceleration, however it is closely related with the topics (1) and (3) because this modeling gives accurate information of the field where high-energy particles move around. (3) In addition to these two modeling, GEMSIS-Sun achieves progress in the integrated studies of energetic phenomena in the solar corona through analyses of various kind of data taken with satellites and ground-based observatories. This topic includes the collaborative research on particle acceleration in weak solar radio bursts with Tohoku University, the research on spatial distribution of high-energy electrons during solar flares using RHESSI and Nobeyama Radio Heliograph, and so forth. In this paper, we summarize the results of these activities and also introduce the research plan of GEMSIS-Sun in Phase 2 which has just started from April 2010.

キーワード:粒子加速,太陽フレア,太陽コロナ,磁場,モデリング

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