E115-021 **Room: 201B** **Time: May 16 16:00-16:15**

GEMSIS-Sun: Drift Kinetic Modeling of Particle Acceleration and Transport in Solar Flares

Takashi Minoshima[1]; Satoshi Masuda[2]; Yoshizumi Miyoshi[1]; Tetsuya Yamamoto[3]; Satoshi Inoue[4]; Kanya Kusano[4]

[1] STEL, Nagoya Univ.; [2] STEL, Nagoya Univ; [3] STEL; [4] ESC/JAMSTEC

http://st4a.stelab.nagoya-u.ac.jp/gemsis/index.html

The GEMSIS-Sun project aims to understand the acceleration and transport mechanisms of energetic particles in solar flares. Many observations have shown that a large amount of particles are accelerated to nonthermal levels in association with the flare. Many of those move toward the low corona and chromosphere, producing nonthermal hard X-ray, gamma-ray and microwave emissions (e.g., Lin et al. 2003; Minoshima et al. 2008). A small fraction of particles can escape from the corona and propagate in the interplanetary space, which are observed as type III radio bursts and by in-situ measurements (e.g., Gosling et al. 2003; Krucker et al. 2007, 2009). A mechanism for producing such particles is, however, not yet understood well.

In the solar corona, a microscopic scale such as a particle gyro-radius and inertia length is an order of 6-9 smaller than a macroscopic scale. Therefore it is unlikely that the particles are governed by microscopic physics only. Observationally, the evolution of flare nonthermal emissions is related closely to macroscopic variables such as the convective electric fields (e.g., Qiu et al. 2002; Asai et al. 2004) and the velocity of a plasmoid and CME (Ohyama & Shibata 1998; Temmer et al. 2008). We consider that macroscopic physics significantly control the particle dynamics as well.

To understand the particle dynamics under the flare macroscopic field configuration and evolution, we perform a drift kinetic Vlasov simulation. In association with the evolution of flare magnetic fields (given analytically) and electric fields (from Faraday's law), the particle phase space distribution deviates significantly from the initial isotropic Maxwellian. The simulation can be done with coronal real parameters. The resulting particle distribution and their direct comparison with observations will be presented.