

Abstract Submitted
for the DPP10 Meeting of
The American Physical Society

Effect of Energetic Electrons on Quiet Auroral Arc Formation

HIROKI HASEGAWA, National Institute for Fusion Science, NOBUAKI OHNO, Japan Agency for Marine-Earth Science and Technology, TETSUYA SATO, University of Hyogo — The theory of feedback instability between the magnetosphere and ionosphere is believed as one of the candidate to explain the formation of quiet auroral arc. Then, some magneto-hydro- dynamics simulations showed the arc formation by this macroscopic instability, while the effect of auroral energetic electrons on the arc formation was neglected or given as a macroscopic parameter in these simulations. On the other hand, because of the recent development of particle simulations, auroral energetic electrons are thought to be produced by the super ion-acoustic double layer that should be created by microscopic instability. To make close investigation of auroral arc formation, it is necessary to consider the interaction with microscopic instability. In this paper, we numerically study the effect of energetic electrons on quiet auroral arc formation by means of the Macro-Micro Interlocked simulation.

Hiroki Hasegawa
National Institute for Fusion Science

Date submitted: 16 Jul 2010

Electronic form version 1.4