R006-P27
ポスター 1：11/25　AM1/AM2（9:15-12:35）

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Gyrokinetic and reduced simulations of the feedback M-I coupling in dipole configuration

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Feedback instability has been investigated as one of the possible mechanisms for explaining spontaneous growth of auroral arcs in the magnetosphere-ionosphere coupling system. Our previous simulation models employing the straight field-line geometry have demonstrated that the secondary growth of the Kelvin-Helmholtz instability leads to nonlinear deformation of arc structures and triggers transition to the Alfvenic turbulence. In the gyrokinetic simulation, we could further confirm parallel acceleration of auroral electrons in the dispersive Alfvenic turbulence.

Recently, we have extended our simulation model to a dipole geometry both for the reduced MHD and gyrokinetic cases. In the former, we have found convective growth of arcs and transition to turbulence followed by the auroral spreading in the latitudinal directions. The linear and nonlinear gyrokinetic simulations in the dipole field provide the first verification of the feedback instability in a kinetic system with the mirror force effect.

Comparison of the simulation results with the Reimei observation data is also in progress, and may be discussed at the meeting.