Abstract Submitted
for the DPP19 Meeting of
The American Physical Society

Detailed analyses of plasma heating during turbulent kinetic magnetic reconnection RYUSUKE NUMATA, University of Hyogo, NUNO LOUREIRO, Massachusetts Institute of Technology — In weakly collisional plasmas, heating of ions and electrons occurs due to phase mixing whereby creating small scale structures in velocity space, even if collisions are rare. It has been demonstrated that the heating via phase mixing is effective during magnetic reconnection [1]. We have shown that ions can be heated with the rate being similar to that of electrons in high-beta plasmas. In the presence of turbulence, magnetic reconnection and associated heating of plasmas may be altered. To study the effects of turbulence on magnetic reconnection, we perform turbulent kinetic magnetic reconnection simulations using the gyrokinetic model. In the previous preliminary study, we observe that, by injecting turbulence from large scale, initially the ion dissipation develops, then the electron dissipation follows to make the heating ratio remain similar to that without turbulence. In this presentation, we discuss how the heating of each species is enhanced by turbulence, and how it depends on plasma parameters, such as the plasma beta. [1] R. Numata and N. F. Loureiro, J. Plasma Phys. 81, 305810201 (2015).

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Date submitted: 03 Jul 2019 Electronic form version 1.4