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**Magnetic fluctuations during reconnection with a guide field in plasma merging experiment** AKIHIRO KUWAHATA, The University of Tokyo, GAO BOXIN, TAICHI ITO, HIROSHI TANABE, SHINGO ITO, MICHIAKI INOMOTO, YASUSHI ONO — Large amplitude magnetic fluctuation with characteristics of long wavelength drift instability was observed using 60 channel pickup coils inside the current sheet during magnetic reconnection in the plasma merging experiment for the fast time. Magnetic fluctuations measurement was carried out by using two radial magnetic probe arrays and a axial probe array. The guide field at the X point  $B_X$  of 45 mT is comparable to the reconnecting magnetic field  $B_{//}$ . Large amplitude magnetic fluctuation was observed during reconnection inside the current sheet. The frequency spectrum of it has clear peak at 2 MHz, which is about twice as high as the local ion gyro frequency. The magnetic field variation  $\Delta B$  caused by the fluctuation is larger than 10% of the reconnecting magnetic field. Furthermore, the fluctuation appears with increasing the effective resistivity  $\eta_{eff} = E_t/j_t$  evaluated at the X point. The typical phase velocity along a guide field is about 100 km/s, which is close to the relative drift velocity  $V_d = j_t/en_e$ . These properties are commonly discussed in the drift kink instability (DKI) modes which appear in the numerical studies. Our results consequently indicate that the fluctuation is responsible for the reconnection rate enhancement and the ion anomalous heating in the plasma merging experiment with a guide field.

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