M16a Ca II 8542Å synthetic Stokes profile on chromospheric reconnection events in 2D RMHD simulation of solar active region

ZHOU,Xinyu (The University of Tokyo); YOKOYAMA,Takaaki (Kyoto University); IIJIMA, Haruhisa (Nagoya University); TORIUMI, Shin (JAXA/ISAS); MATSUMOTO, Takuma; KATSUKAWA, Yukio; KUBO, Masahito (NAOJ)

Magnetic reconnection is responsible for many chromospheric phenomena, such as anemone jets and UV bursts. Polarization behavior of chromospheric reconnection events is indispensable for modeling the magnetic field geometry, but has not been well investigated yet so far. We studied the full synthetic Stokes profile of Ca II 8542Å IR line from 2D realistic radiative MHD simulation of chromospheric reconnection events. Emerging magnetic flux is imposed at the bottom boundary (2Mm below the photosphere) of well-developed atmosphere, leading to chromospheric reconnection events with 30km/s outflow speed. We performed Stokes synthesis by RH code around 8542Å, Gaussian sampled with 50mÅ spacing to compare with future observation of DKIST ViSP. Brightening and outflow Doppler shift on Stokes I profile has been reproduced, which is consistent with previous works. We found direction switch on Stokes V and amplitude reduction on linear polarization at reconnection sites. Also, we report strong linear and circular polarization signals corresponding to huge and tiny plasmoids, respectively, which might help track their motions in observation. In addition, we suggest linear polarization reduction, as the information of magnetic field geometry, could be an indicator to discriminate reconnections from shocks.