

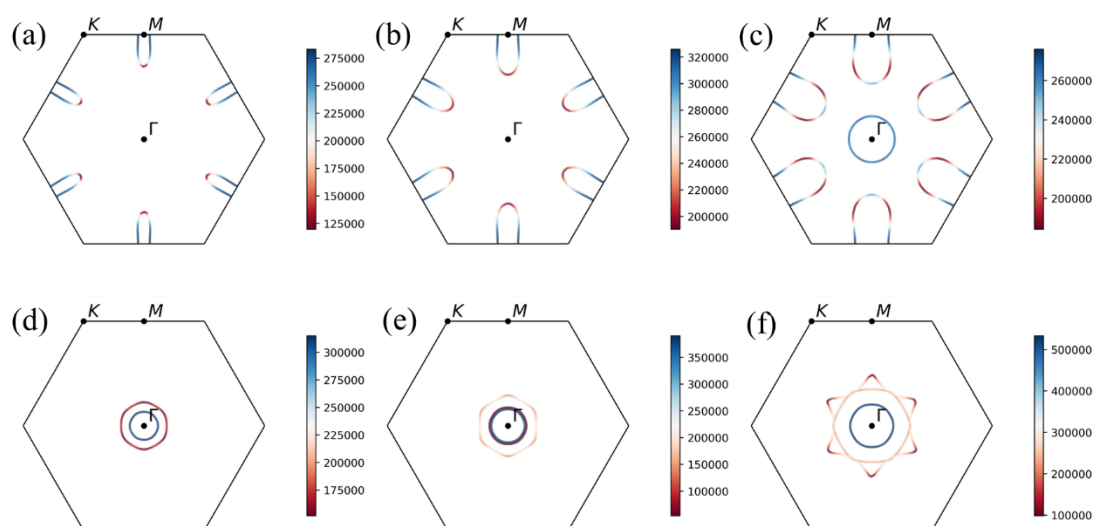


Fig. S1 (Color online) Fermi velocity projected Fermi surface under different carrier concentrations.

(a) $n = 0.02$. (b) $n = 0.04$. (c) $n = 0.1$. (d) $n = -0.02$. (e) $n = -0.04$. (f) $n = -0.1$.

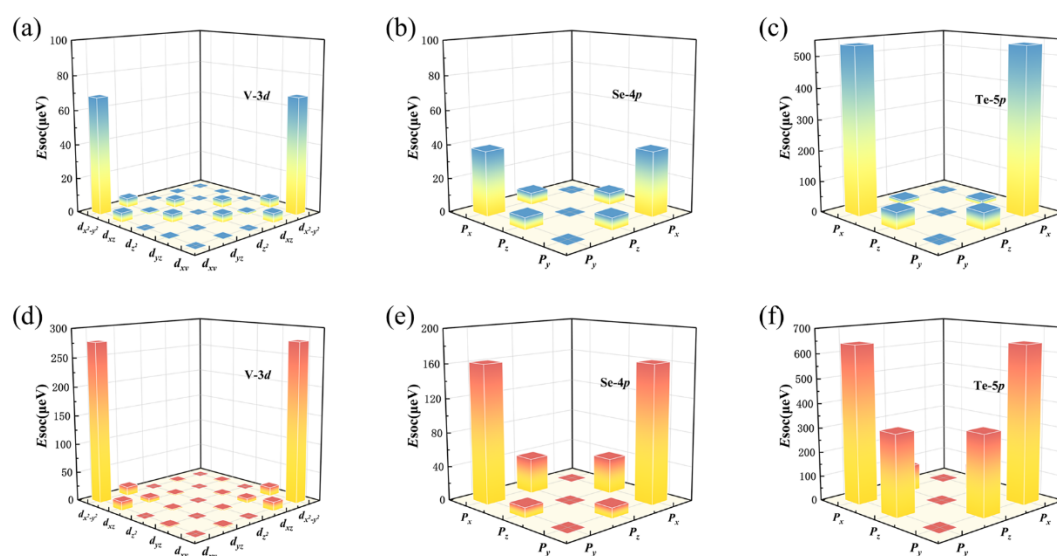


Fig. S2 (Color online) (a)–(c) The contribution of SOC deriving from the 5p of Te, 4p of Se and 5p of Te when the carrier concentrations are up to $7.293 \times 10^{13} \text{ cm}^{-2}$ (0.08 electrons per atom). (d)–(f) The contribution of SOC deriving from the 5p of Te, 4p of Se and 5p of Te when the carrier concentrations are up to $7.293 \times 10^{13} \text{ cm}^{-2}$ (0.08 holes per atom).

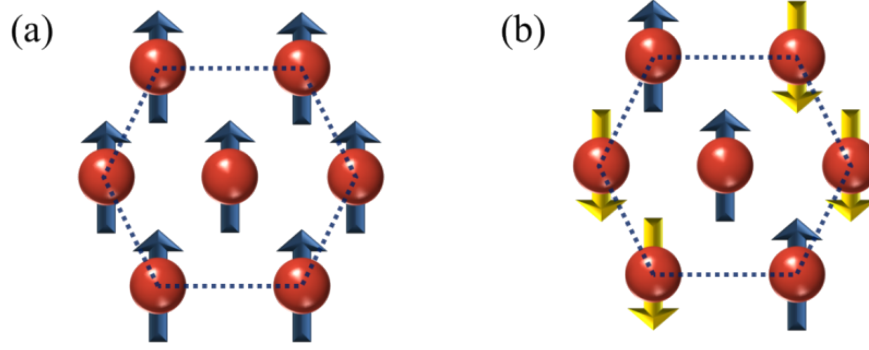


Fig. S3 (Color online) (a) FM configuration of the Janus VSeTe monolayer. (b) AFM configuration of the Janus VSeTe monolayer.

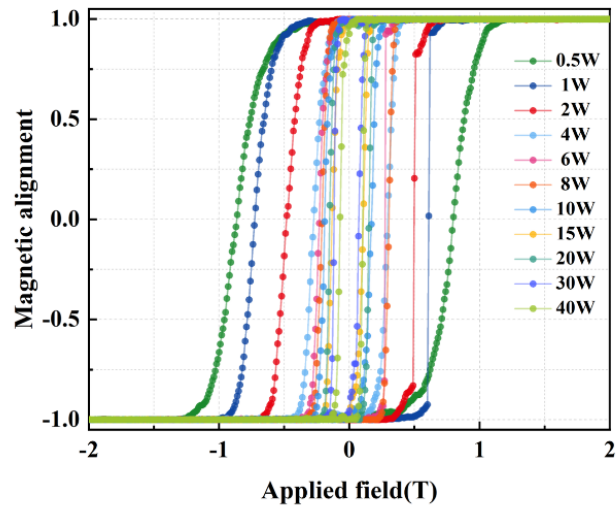


Fig. S4 (Color online) The lagging loop changes with the number of relaxation steps.