Electronic Supplementary Information for

Stacking-tuned Quantum Anomalous Hall Effect and Multi-phase Transition in Kagome Lattice V_2Se_3

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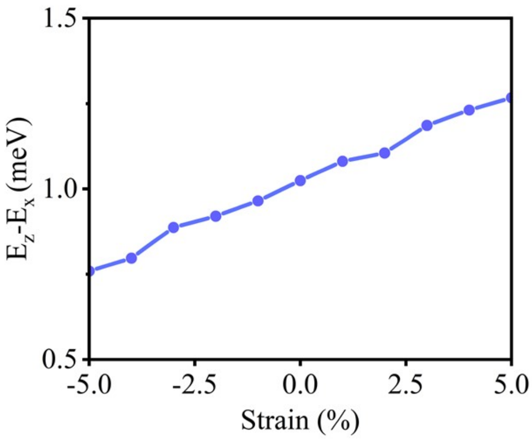

Figure S1 The magnetic anisotropy energy values of ML V_2Se_3 change with strain from -5% to 5%.

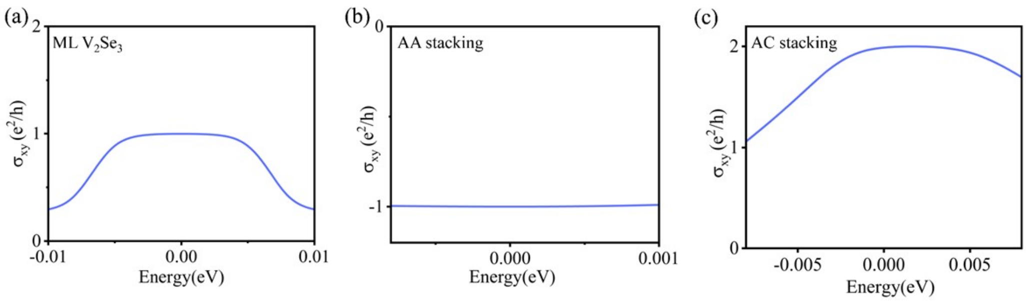

Figure S2 The anomalous Hall conductance for (a) ML V_2Se_3 with 1% biaxial tensile strain, (b) AA stacking with 4% biaxial tensile strain, and (c) AC stacking.

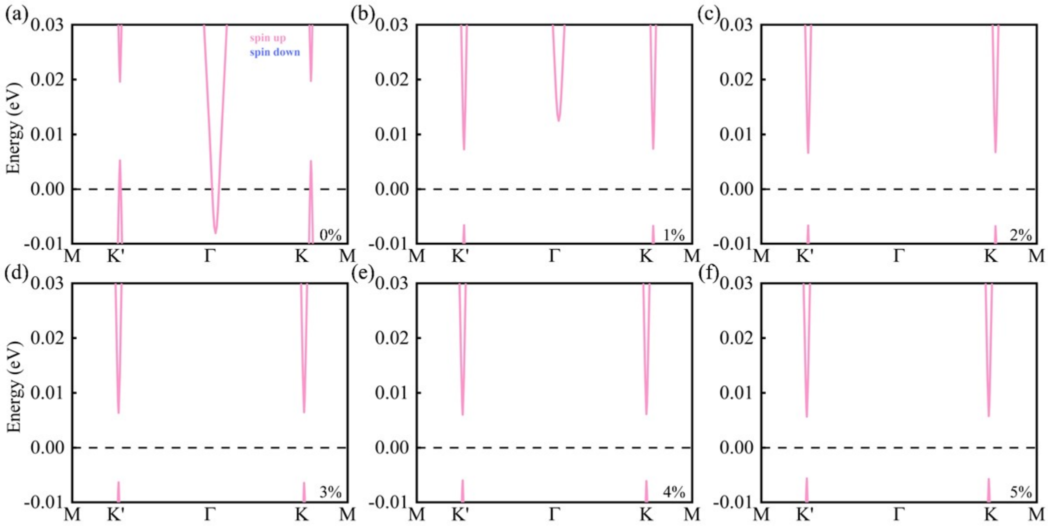

Figure S3 The change of energy bands considering SOC under 0-5% biaxial tensile strain.

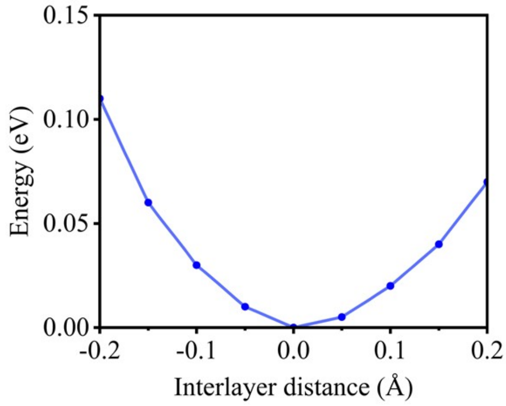

Figure S4 The energy diagram for different interlayer distances of AA stacking.

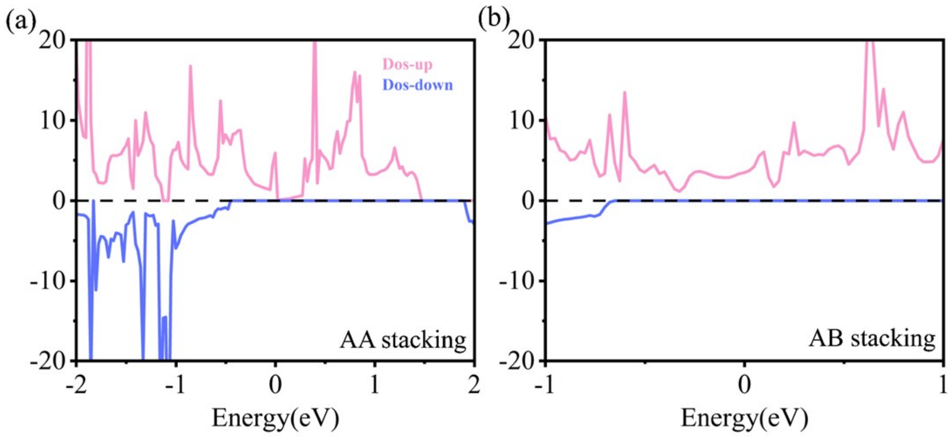

Figure S5 The density of states for (a) AA stacking and (b) AB stacking, respectively.

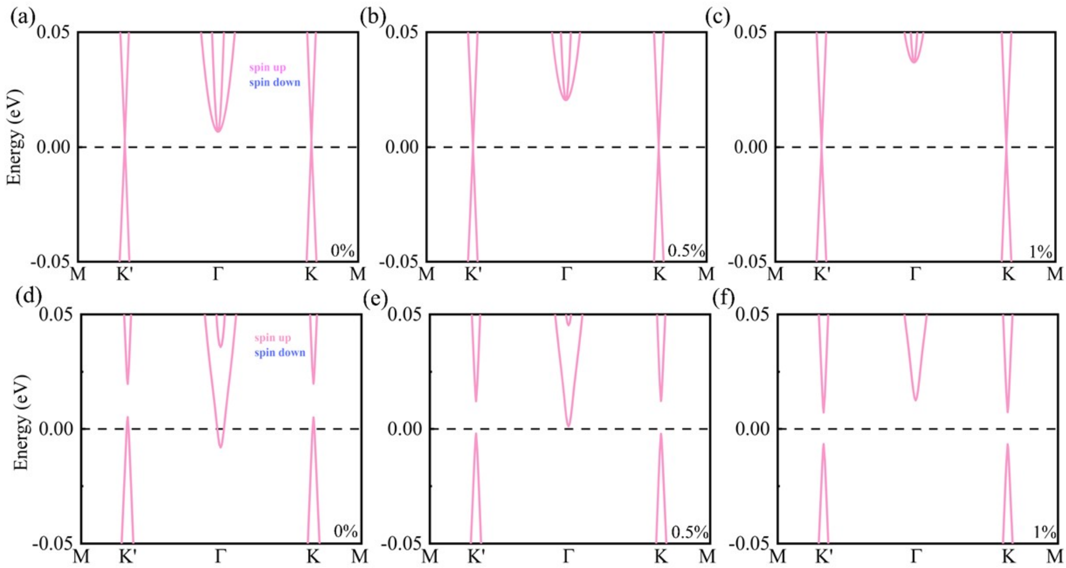

Figure S6 The band structures of ML V_2Se_3 under different tensile strains (0%, 0.5%, 1%), (a)-(c) without SOC, and (d)-(f) with SOC.

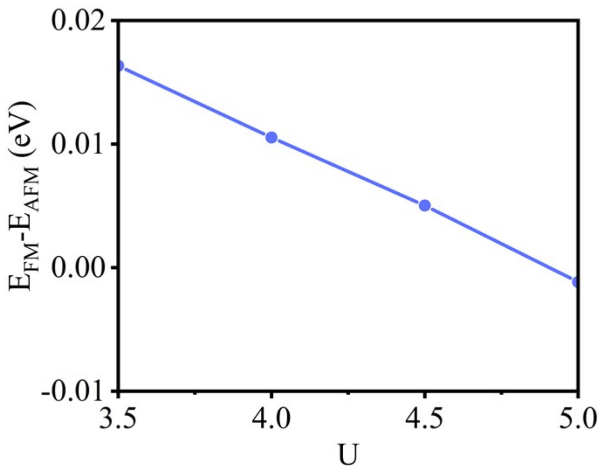

Figure S7 The energy difference of the magnetic state for different U values.

Table S1 The irreducible representations (irreps) of the valence band and conduction band near the Fermi surface in ML V_2Se_3 with SOC, which are provided in ascending order of the energy eigenvalues. The numbers in bracket indicate their degeneracy.

Spinless	Γ	K	M
Bands	$\Gamma_3^-(1)$ $\Gamma_5^+(1)$	$K_6(2)$	$M_3^+(1)$ $M_2^-(1)$
Spinful	Γ	K	M
Bands	$\bar{\Gamma}_{17}(1)$ $\bar{\Gamma}_8(1)$	$\bar{K}_7(1)$ $\bar{K}_9(1)$	$\bar{M}_3(1)$ $\bar{M}_6(1)$