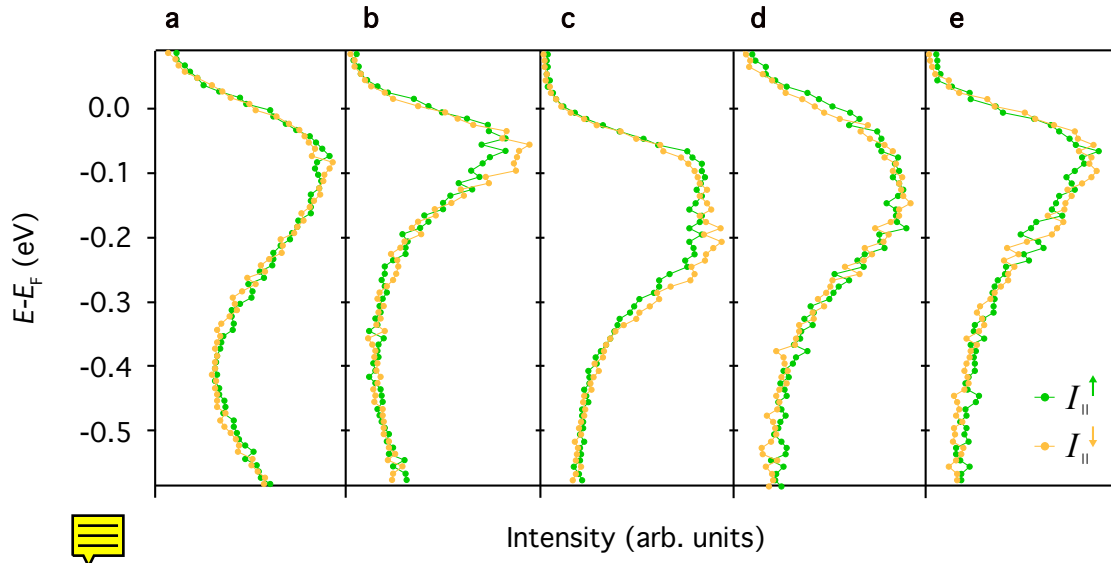
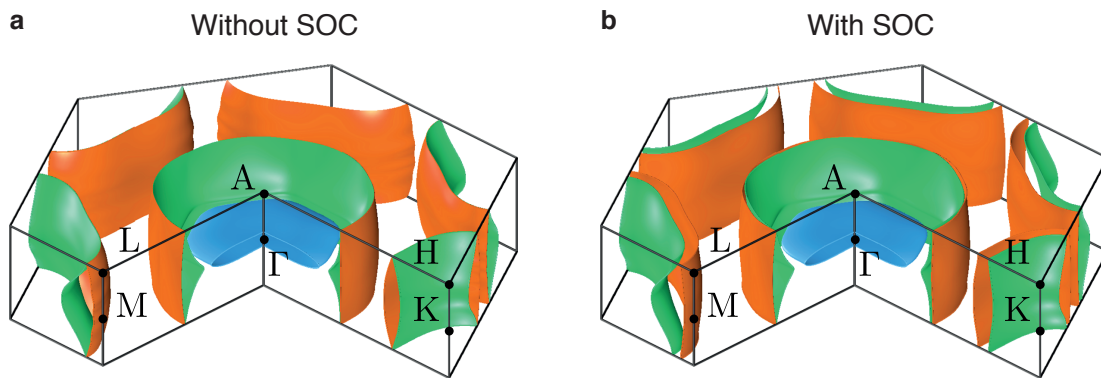




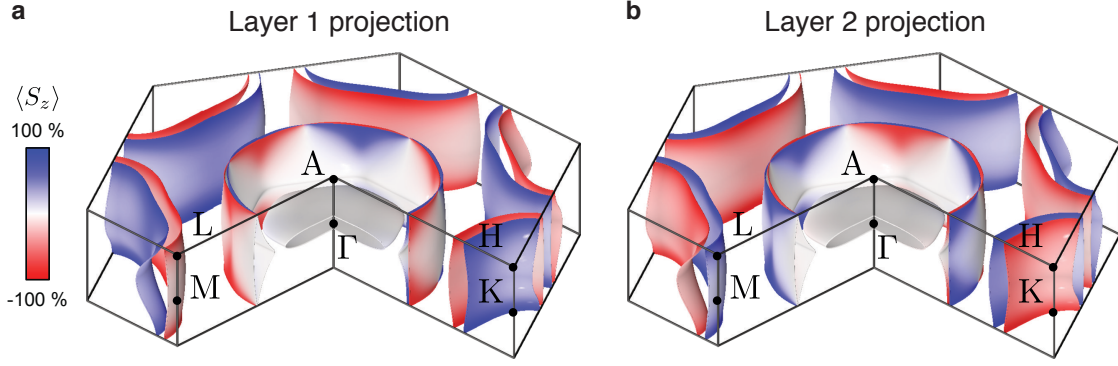
Supplementary Figures



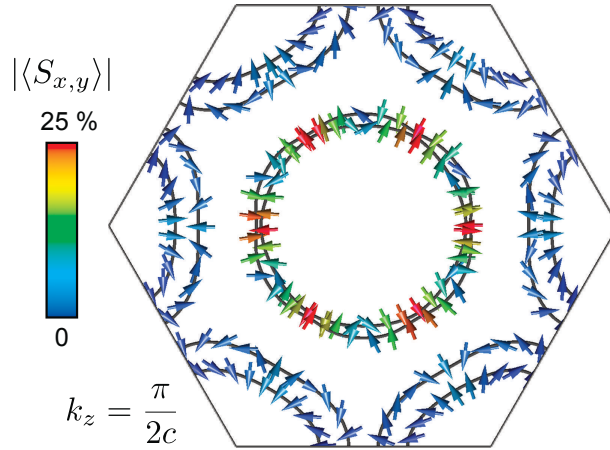
Supplementary Figure 1. **Measured in-plane spin component.** (a-e) Negligible in-plane component of the measured photoelectron spin along the analyser slit (parallel to the $\bar{\Gamma} - \bar{M}$) direction corresponding to the out-of-plane components shown in (b-f) of Fig. 2 of the main text, respectively. The x -axis tick marks denote the zero of each EDC.



Supplementary Figure 2. **Influence of spin-orbit coupling on the Fermi surface of NbSe₂.** (a) Three-dimensional Fermi surface of NbSe₂ calculated (a) without and (b) including spin-orbit coupling.



Supplementary Figure 3. **Layer-dependent spin texture.** Calculated out-of-plane component of the Fermi surface spin polarisation projected onto the (a) first and (b) second NbSe₂ layer of the unit cell.



Supplementary Figure 4. **In-plane spin texture.** In-plane vectorial spin texture for the $k_z = \pi/2c$ plane, with the spin direction shown by arrows and the magnitude shown by the colour scaling. This indicates that the in-plane spin configuration is dominantly radial to the Fermi surface.