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## Electric-field induced magnetic-anisotropy transformation to achieve spontaneous valley polarization

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FIG. 1. (Color online) For  $VSi_2P_4$  monolayer, the energy difference between AFM and FM (per chemical unit) as a function of E.



FIG. 2. (Color online)For  $VSi_2P4$  monolayer, the local magnetic moment of V as a function of E.



FIG. 3. (Color online) For  $VSi_2P_4$  monolayer with out-of-plane MA, the V-*d*-orbital characters energy band structures without electric field.