

Supplementary materials for tuning ferromagnetic $\text{BaFe}_2(\text{PO}_4)_2$ through a high Chern number topological phase

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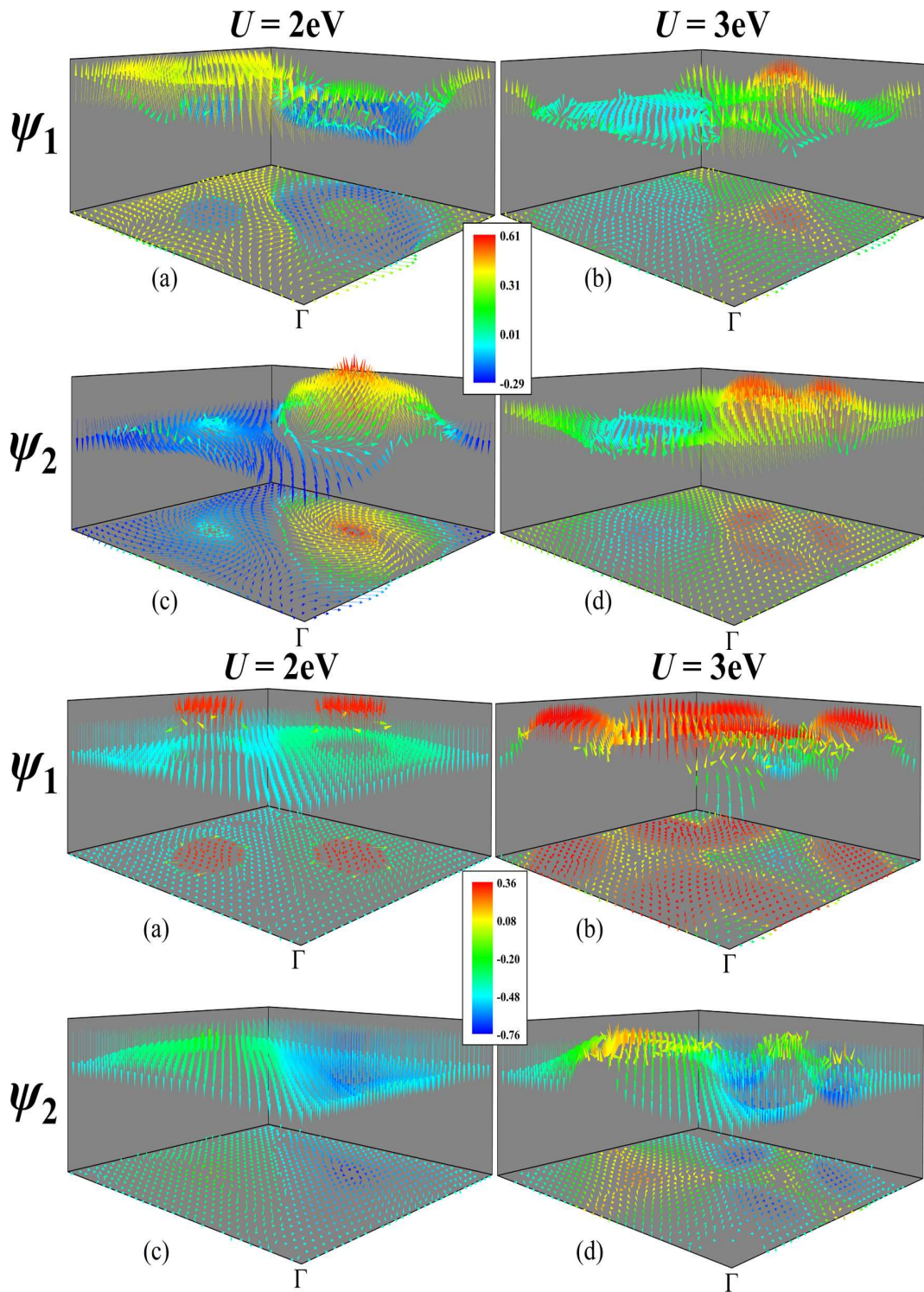


FIG. 1: (color online) Orbital $\sum_n \langle \phi_{kn} | \vec{l} | \phi_{kn} \rangle$ and spin $\sum_n \langle \phi_{kn} | \vec{s} | \phi_{kn} \rangle$ textures in a square region in \vec{k} space. The axes are along Cartesian axes; Γ is at the near corner, M is midway along the diagonal toward the far corner, the vortices circle the K , K' points. The orbital texture in the Chern phase ($U=2\text{ eV}$) are shown for each band in (a,c) and for the trivial Mott insulator ($U=3\text{ eV}$) in (b,d). The corresponding spin textures are shown in the lower four panels. The color denotes the \hat{z} component of the texture field, with positive being parallel to the spin orientation, *i.e.*, \hat{c} -direction, while the arrow provides the direction.