

This theoretical study proposes an innovative scheme to realize a two-dimensional higher-order Weyl semimetal by coupling a trilayer topological film with a d-wave altermagnet. The pristine trilayer system exhibits helical edge states and hosts four bulk Weyl points at high-symmetry points. Introducing an out-of-plane d-wave altermagnetic exchange selectively gaps the helical edges while preserving two Weyl points, leading to the emergence of topological corner states within the edge gap. The corner modes are characterized by quantized winding numbers in symmetric subspaces and remain robust against symmetry-preserving disorder. The results are reliable, novel, and detailed. I recommend publication in SciPost after addressing the following minor points:

1. It can be observed that there is still a small energy gap in the band structures (bulk bands) of nanoribbons as shown in Fig. 2(c) and Fig. 3(a). Is this due to the insufficient size of the system? The authors should address this point.
2. Higher-order topological phases are typically studied in systems with a full global band gap. If the bulk gap closes completely in the thermodynamic limit, can the corner states still be clearly distinguished? Is it possible for them to hybridize with bulk states? It would be helpful to include a discussion explaining why the corner states can remain identifiable in such a scenario.