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Textural domain walls in superfluid ^{3}He-B TAKESHI MIZUSHIMA, Osaka University — Owing to the richness of symmetry, the superfluid ^{3}He serves as a rich repository of topological quantum phenomena. This includes the emergence of surface Majorana fermions and their quantum mass acquisition at the topological critical point.[1] Furthermore, the marriage of the prototype topological superfluid with nanofabrication techniques brings about a rich variety of spontaneous symmetry breaking, such as the formation of the stripe order and nontrivial domain walls. In this work, we examine the possible formation of textural domain walls in the superfluid ^{3}He-B confined to a thin slab with a sub-micron thickness. When an applied magnetic field is much higher than the dipolar field, two nearly degenerate ground states appear, which are characterized by the Ising order associated with the spontaneous breaking of a magnetic order-two symmetry, $\hat{\ell}_z = +1$ and -1. We here discuss the structure of the textural domain wall formed by the spatial modulation of the Ising order, such as low-lying quasiparticle excitations and spontaneous spin current. We also report bosonic modes bound to the textural domain wall.

[1]T. Mizushima *et al.* arXiv:1508.00787.

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