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String-wall composites from torus knot vacuum of an axionlike model and the cosmological simulations

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We study a simple axionlike model with two complex scalar fields under global U (1) symmetry. The charge of one scalar field is double the other one. A particular feature of our model is that a vacuum manifold is a torus knot, resulting in the formation of a string-wall network. We numerically show that the network becomes a network of narrow strips of string-wall composites (a "kishimen"network.) We find some of strip loops cut off from the network have the shape of a Moebius strip. The fact that the walls are confined in narrow strips implies that our model is free from the domain wall problem.

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