# Topological superconductivity induced by two-dimensional nontrivial spin structures

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Nontrivial spin textures often give rise to topologically nontrivial quantum states and associated unconventional magnetic, transport, and optical phenomena. Usually, the Dzyaloshinskii-Moriya interaction is considered as the stabilization mechanism. In this work, we show how the Ruderman-Kittel-Kasuya-Yosida-type interaction can lead to the formation of similar structures. It has been demonstrated that helical spin structures in superconducting nanowires and ladders can induce topological superconductivity with Majorana edge states. We generalize this result to two-dimensional systems, i.e., we show the stability of nontrivial spin structures in two-dimensional superconducting systems, where they also can lead to topological superconductivity with Majorana edge states. Such systems are promising for use in fault-tolerant quantum computing.

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