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Magnetic Majorana Fermions

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Condensed matter systems provide emergent mini-universes in which quasiparticles may exist which do not correspond to any experimentally detected elementary particle. Topological quantum materials have been particularly productive in this regard, with the present search focussing on Majorana fermions, known theoretically already for decades. Here, we discuss manifestations of magnetic Majorana fermions in the Kitaev model. We place particular emphasis on their fate when perturbations, such as Heisenberg terms, are added to the ideal model system, and address experimental signatures of their vestiges in phases adjacent to the spin liquid.