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Probing Majorana edge states with a qubit CHANG-YU HOU, FABIAN HASSLER, Institute Lorentz, Leiden University, JOHAN NILSSON, Department of Physics, University of Gothenburg, ANTON AKHMEROV, Institute Lorentz, Leiden University — A pair of counter-propagating Majorana edge modes can be described by an Ising conformal field theory. These modes appear in a chiral p-wave superconductor or in some superconducting system belonging to the same universality class. We show how a superconducting flux qubit attached to a such system couples to the two chiral edge modes via the disorder field of the Ising model. Thus, measuring the back-action of the edge states on the qubit allows to probe the properties of Majorana edge modes.

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