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Corner Junction as a Probe of Helical Edge States CHANG-YU HOU, Department of Physics, Booston University, EUN-AH KIM, Department of Physics, Cornell University, CLAUDIO CHAMON, Department of Physics, Booston University — We propose and analyze inter-edge tunneling in a quantum spin Hall corner junction as a mean to probe the helical nature of the edge states. We show that electron-electron interactions in the one-dimensional helical edge states result in Luttinger parameters for spin and charge that are intertwined, and thus rather different from those for a quantum wire with spin rotation invariance. Consequently, we find that the four-terminal conductance in a corner junction has a distinctive form that could be used as evidence for the helical nature of the edge states.

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