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**Phase Slips in Topological Superconductor Wire Devices** SAMUEL GOLDBERG, DORON BERGMAN, DAVID PEKKER, GIL REFAEL, California Institute of Technology — We make a detailed study of phase slips in topological superconducting wires and devices based on topological wires. We begin by investigating a device composed of a topological superconducting wire connected to a non-topological wire (T-S). In the T-segment only slips of the phase by multiples of $4\pi$ are allowed, while in the S-segment slips by $2\pi$ are also allowed. We show that near the interface, $2\pi$ phase slips are also allowed and we comment on the consequences of such phase slips for the Aharonov-Casher effect. We also consider an implementation of a q-bit consisting of a T-S-T device, where the quantum information is stored in the parity of the two topological segments via the four Majorana modes. We show that the central S-segment of this type of device can support $2\pi$ phase-slips which result in the decoherence of the q-bit.

Samuel Goldberg
California Institute of Technology

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