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Andreev bound states in a semiconducting nanowire Josephson junction, Part I: Detection and manipulation of an Andreev qubit[1]

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Proximitized semiconducting nanowires subject to magnetic field should display topological superconductivity and support Majorana zero modes which exhibit non-Abelian braiding statistics. The conventional Andreev levels formed in such wires, in the absence of field, are a precursor to these exotic zero modes. In this talk, we report on the detection and coherent manipulation of an Andreev level qubit in a proximitized InAs nanowire non-topological Josephson junction, using circuit QED microwave techniques.

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