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Superconducting Quantum Interference Proximity Transistor (SQUIPT)

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The superconducting quantum interference proximity transistors, abbreviated SQUIPTs, are interferometers based on a Josephson junction (JJ) that use the superconducting proximity effect to achieve high sensitivity in the measurement of magnetic fields. SQUIPTs can provide phase control of the thermal conductivity at very low temperatures by modifying applied magnetic flux [1]. This article gives a general overview of the latest discoveries regarding the aforementioned transistors. Research in this field can be crucial for potential application in radiation sensing, thermal logic gates, and the next generation of electronic devices - quantum computers. Topological SQUIPT is especially interesting given its potential application in nano-electronics and spintronics [2]. ω-SQUIPT is a recently realized three-terminal Josephson interferometer where the normal metal is in a form of a T-shaped nanowire connecting two superconducting loops, which helped in further understanding of multi-terminal JJs [3]. Understanding characteristics of these devices is important for realizing their potential for application in different fields.

References:

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