

Josephson Junctions and Squids

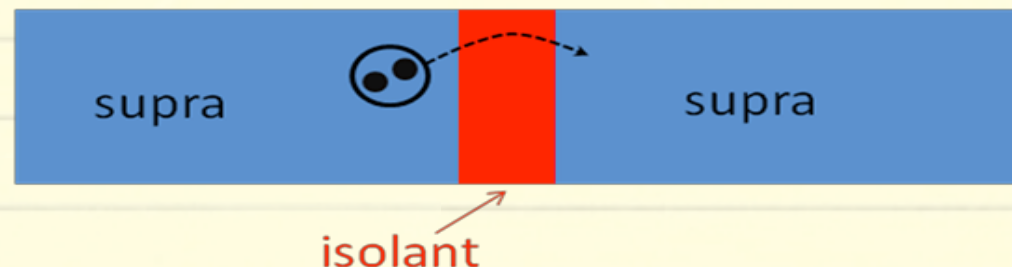
The development of superconductors (SC) took a while: after the discovery of zero resistance in 1908, it took half a century to provide an explanation, the BCS-theory.

Brian Josephson was a 22-year old student, when in 1962 he asked his professor a simple question: what happens when we connect two SCs via a thin insulator (later called the Josephson junction). The answer he found himself: there is a superconducting tunnel current. And if one applies a voltage, it oscillates with a frequency depending on the voltage and the external magnetic field.

This was quite a surprise and led to astounding discoveries. The most important one is the SQUID (Superconducting Quantum Interference Devices). People managed to arrange the Josephson junctions to build these magnetometers sensitive enough to measure human brain magnetic fields.

The talk will give an introduction to the physics of Josephson junctions and the story of its discovery.

Schematic Josephson junction:



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Selected Topics - From basic solid state research to applications

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