André Verbeure

JOSEPHSON CURRENTS: A MICROSCOPIC MODEL

A two-dimensional microscopic model based on the BCS-model is presented in order to realise the Josephson junction between two superconductors plates. A nonequilibrium steady state of the total system is explicitly constructed and its properties are analysed. In particular the Josephson current is rigorously computed as a function of the phase difference of the two superconducting plates. The typical properties of the current are recovered . Also the heat flux (entropy production) is considered.