

Proposed experimental investigation into relaxation phenomena in the adiabatic phase transition of Type I superconductor particles

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The first order phase transition of a Type I superconductor involves thermal and electrodynamic relaxation processes of the control variables for which the time of the electrodynamic relaxation is three orders of magnitude faster than the thermal relaxation. [1-6]

In the first order adiabatic phase transition of macroscopic specimens, collective averaging renders relaxation time differences of the control variables unobservable and the phase transition isentropic. In the first order adiabatic phase transition of mesoscopic particles, coherence renders time differences of the control variables observable and the phase transition non-isentropic.

An experimental approach to the relaxation processes of the control variables for first order adiabatic phase transitions in both the macroscopic and mesoscopic size regimes will be discussed.

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