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Report of Referee B -- LG18284/Hirsch

The manuscript continues the theme of multiple recent writings by the author attempting to disprove the conventional theory of superconductivity. While the author appears to claim the faults of the BCS theory, he actually does not use that theory in any of the calculations, relying instead on a two-fluid model, taken so liberally and out of context that it goes beyond physics in the realm of drawing figures that one then wants to defeat. One example is eq.(5), which claims the normal current by Bogoliubov quasiparticles, and then proceeds to point out inconsistencies in Joule heating. What the author seems to have forgotten is that the superconducting condensate shorts the connection, so actually having a finite electric field across a superconducting sample requires either a current exceeding critical current or highly non-equilibrium situation. Neither one can be addressed in the framework of the approach taken in the manuscript. Therefore, the inconsistency involving Joule heating is completely made up.

I suggest that the author considers a microscopic theory of superconductivity, and determines the Joule heating in the non-equilibrium Keldysh formalism for a superconductor with leads attached, including full self-consistency on the spatial dependence of the order parameter, including near the leads. If such calculation shows discrepancies with prevailing theories, we will be able to have a scientific discussion on where it originates, and whether it is a deficiency of the approach or the underlying assumptions. Since the current calculation does not address this, a constructive physics discussion is impossible, and the manuscript is not appropriate for publication in a reputable scientific journal.