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Maintaining the local temperature below the critical value in thermally out of equilibrium superconducting wires[1] MASSILLIANO DI VENTRA, UCSD, YONATAN DUBI, Los Alamos National Laboratory — A generalized theory of open quantum systems combined with the mean-field theory is used to study a super-conducting wire in contact with thermal baths at different temperatures. It is shown that, depending on the temperature of the colder bath, the temperature of the hotter bath can greatly exceed the equilibrium critical temperature. The effects of contact areas and disorder are studied. Finally, an experimental setup is suggested to test our predictions, and the relevance of our results to the quest of a superconducting device that will operate at room temperatures is discussed.

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