

Abstract Submitted
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Fluctuations of the superconducting order parameter as an origin of the Nernst effect KAREN MICHAELI, Department of Condensed Matter Physics, The Weizmann Institute of Science, Rehovot 76100, Israel, ALEXANDER FINKEL'STEIN, The Weizmann Institute of Science, Israel and Department of Physics, Texas A&M University, College Station, TX 77843-4242, USA — We show that the strong Nernst signal observed recently in amorphous superconducting films far above the critical temperature is caused by the fluctuations of the superconducting order parameter. We demonstrate a striking agreement between our theoretical calculations and the experimental data at various temperatures and magnetic fields. Besides, the Nernst effect is interesting not only in the context of superconductivity. We discuss some subtle issues in the theoretical study of thermal phenomena that we have encountered while calculating the Nernst coefficient. In particular, we explain how the Nernst theorem (the third law of thermodynamics) imposes a strict constrain on the magnitude of the Nernst effect.

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