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Analysis of temperature dependent thermopower of iron chalcogenide superconductors

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Abstract content
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The newly discovered class of Fe-based chalcogenide superconductors is attracting worldwide attention due to their applicative potential with transition temperatures above 50 K and very high upper critical fields as well as for fundamental studies of superconducting mechanisms. In present study, thermopower (S) of FeSe_{0.5}Te_{0.5}Te_{0.5} bulk sample was investigated. Anomalous behavior was observed in thermopower with the absolute value of S reaches as high as 11 mu;V/K (at 300 K). The complicated temperature dependence of thermopower is an indication of change in majority charge carriers in the low temperature regime. Our theoretical results indicate that the variation of thermopower with temperature can be explained by conventional electron diffusion and phonon drag mechanisms.

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