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DC C-axis Electrical Resistivity of FeSe Superconductor DHANEESH KUMAR, DOUG BONN, Univ of British Columbia — Superconductivity in iron pnictides is an area of interest for the condensed-matter community. The relatively high critical temperature (T_C) of 26 K first observed in 2008 in one of these materials offered new opportunities for research. Iron (II) selenide (FeSe), which has the simplest crystal structure among the iron-based superconductors (FeSC) has a T_C of about 8 K. FeSe, because of its simple crystal structure, is a material at the center of understanding the superconducting mechanism in FeSCs. Understanding the electrodynamics of FeSe is one such focus. Previously, no known measurements have been made of the DC c-axis electrical resistivity although the resistivity in the ab-plane of FeSe is well-documented. This study is aimed at measuring this quantity using standard experimental procedures which include a four-wire measurement and the modified Corbino method for electrical contacts. This study found that the magnitude of the resistivity in the c-axis direction is much greater than in the ab-plane as expected. Further, the resistivity as a function of temperature illustrates values of T_C and the structural transition temperature, T_S, that agrees with values observed with ab-plane measurements.

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