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Transport properties of 3D extended s-wave states appropriate for iron-based superconductors[1] VIVEK MISHRA, University of Florida, SIEGFRIED GRASER, Center for Electronic Correlations and Magnetism, Institute of Physics, University of Augsburg, PETER HIRSCHFELD, University of Florida — The Fermi surfaces of Fe-pnictide superconductors are fairly two-dimensional (2D), and it has thus come as a surprise that recent penetration depth and thermal conductivity measurements on some systems have reported c-axis transport at low temperatures in the superconducting state comparable to or even larger than that in the ab plane. These results should provide important information on both the Fermi surface and the superconducting state. Here we consider the theory of the superfluid density and thermal conductivity in models of extended-s wave superconducting states expected to be appropriate for Fe-pnictide systems. We include both intra- and interband disorder and consider a range of different Fermi surfaces where gap nodes might exist. We show that qualitative fits can be obtained to match recent experiments on $Ba(Fe_{1-x}Co_x)_2As_2$, and discuss their implications.

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