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Theory of thermal conductivity in a multi-band superconductor : Application to pnictides[1] VIVEK MISHRA, Department of Physics, University of Florida, Gainesville, Florida 32611, USA, A.B. VORONTSOV, Department of Physics, Montana State University, Bozeman, Montana 59717, USA, P.J. HIRSCHFELD, Department of Physics, University of Florida, Gainesville, Florida 32611, USA, I. VEKHTER, Department of Physics and Astronomy, Louisiana State University, Baton Rouge, Louisiana 70803, USA — We calculate low temperature thermal conductivity within a two band model for newly discovered ferro-pnictide superconductors. We consider three different cases, sign changing s-wave state, highly anisotropic s-wave state and a state with order parameter nodes on one band. To include the effect of disorder, we have performed fully self-consistent T-matrix approximation including both intraband and interband impurity scatterings. We also study the behavior of the low temperature thermal conductivity under applied magnetic field using a recently developed variant of the Brandt-Pesch-Tewordt approximation, and compare our results with latest experimental data.

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