Effects of anisotropic impurity scattering on thermal conductivity and thermoelectric effect in unconventional superconductors

MIKAEL FOGELSTROM, Applied Quantum Physics, MC2, Chalmers Technical University Gothenburg S-41 296 Sweden, TOMAS LOFWANDER, Institut für Theoretische Festkörperphysik — We report analytic and numerical results for the thermal conductivity and thermoelectric effect in unconventional superconductors with a dilute random distribution of impurities. We present new results for the effects of anisotropic impurity scattering. For low temperatures we present analytic results for the universal limit asymptotics and the $T^3$ corrections. Only the $T \to 0$ value of the thermal conductivity remains universal (independent of the impurity scattering potential). All other quantities depend on the phase shifts and vertex corrections.

Mikael Fogelstrom
Applied Quantum Physics, MC2, Chalmers Technical University
Gothenburg S-41 296 Sweden

Date submitted: 04 Dec 2004