Simultaneous Measurements of the Torsional Oscillator Anomaly and Thermal Conductivity in Solid ${}^4\mathrm{He}$

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In these torsional oscillator experiments the samples of solid ⁴He were characterized by measuring their thermal conducitvity. Polycrystalline samples of helium of either high isotopic purity or natural concentration of ³He were grown in an annular container by the blocked-capillary method and investigated before and after annealing. No correlation has been found between the magnitude of the low-temperature shift of the torsional oscillator frequency and the amount of crystalline defects as measured by the thermal conductivity. In samples with the natural ³He concentration a substantial excess thermal conductivity over the usual T^3 dependence was observed below 120 mK.