Non equilibrium thermal and electrical transport coefficients for hot metals

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This work is focused on the discussion about the transport coefficients for non equilibrium hot metals. First, we review the role of the non equilibrium Kappa distribution, [1], in which the Kappa parameter varies with the temperature [1, 2]. A brief discussion compares such distribution with the classical non equilibrium function used in metals. Later, we show the derivation of the generalized electrical conductivity [3]. Also, it is shown the connection between the melting point of the metal and a material-dependent coefficient which can be extracted by analyzing its thermionic emission[3]. We extend previous studies by analyzing additional metals used as thermionic emitters. Finally, in the light of the Wiedemann-Franz Law, we present a new generalized thermal conductivity, which is also analyzed.

References

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