Interpolations for plasma transport properties in the first Born approximation of the linear response theory

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In the work closed expressions for electron-electron correlation functions and fully ionized plasma dc electrical conductivity, heat conductivity and thermopower are presented. The approach is based on the linear response theory in the formulation of the relevant statistical operator method and takes into account both dynamical screening and arbitrary degeneracy. The expressions are constructed in the form that includes the asymptotic properties for non-degenerate [1], moderate [2, 3] and strongly degenerate [4] plasma and describe more wide density-temperature region that in [5]. The role of exchange parts in electron-electron correlation functions is discussed. The results obtained might be useful in calculating the multicomponent plasma transport properties.

References

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