

Solution of the stationary radiation transport problem for energy scattering using matrix functions

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Abstract

The transport equation of Boltzmann is formulated and solved by means of an infinite equation of matrices for the case of the stationary rectilinear propagation of radiation with respect to energy scattering only. It is shown that the matrix formalism is the proper one to explain the qualities of transformations and the non-commutativity of the radiation transmitted through compound, heterogeneous layers of material. Furthermore, an analytical and perspicuous representation of the transmission of divergent beams is given. Finally, simple equations for the flux of radiation, the mean range, and the counting rate are set up.

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