PREFACE

The present undertaking was motivated by a desire to get a good and ready approximate solution of the integral equation to which the transfer equations are reduced specially by the method of 'Principle of Invariance' and by Sobolev's 'Method of Quantum Exit from the Medium'. For the purpose we developed several suitable approximate forms of the H-function. We applied these approximate forms to calculate the contours of interlocked multiplets and to the numerical determination of the H-function for fractional values of the albedo w, which are not covered by existing Tables(vide Ref. (2),(8) of Chapter I).

Wings of solar Ca K line(purely noncoherent) have been calculated with two new forms of the noncoherent emission term $\bar{J}(t)$ by Eddington's approximate method. A modified form of Eddington's ammended approximation has been applied to determine the noncoherent line contour of the solar K line and some improvement of the results has been noticed.

The introduction is devided into three parts: (1) general introduction giving a physical background of the noncoherent scattering problems (2) a mathematical background giving a short account of the existing methods of solution of noncoherent equation of transfer. (3) a discussion about the method of calculation of line contours. The introduction is preceded by few pages stating the scope and object of the thesis.

At the end of the thesis we attach a reprint of the published paper.

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