

Preface

This thesis is an attempt to study the spherical harmonic method (SHM) in solving some radiative transfer problems in different atmospheres (semi-infinite, finite and spherical). The emphasis is mainly on plane parallel scattering atmosphere with one problem on spherical geometry. The problems have been solved by using various phase functions and in each case the expression for source function is obtained. The phase functions used are i) Isotropic, ii) Rayleigh, iii) Planetary, iv) Henyey-Greenstein and v) General phase function.

In case of semi-infinite atmosphere the emergent intensities are calculated and numerical results are given. Also, in connection with the semi-infinite atmosphere a study has been done on Chandrasekhar's H-function. Various approximate forms of H - function are considered. Using these forms, numerical results are obtained for H-function and presented in tabular form.

The thesis contains five chapters. Computed results are presented in four of these five chapters.

Anjan Raychaudhuri
Department of Mathematics
North Bengal University

November, 1997