A COMPUTER CODE FOR CALCULATION OF NLTE MODEL ATMOSPHERES USING ALI

Jiří Kubát

Astronomický ústav AV ČR, 251 65 Ondřejov, Czech Republic

A code for calculation of NLTE model atmospheres in hydrostatic and radiative equilibrium in either spherically symmetric or plane parallel geometry is described. The method of accelerated lambda iteration is used for the treatment of radiative transfer. Other equations (hydrostatic equilibrium, radiative equilibrium, statistical equilibrium, optical depth) are solved using the Newton-Raphson method (linearization). In addition to the standard output of the model atmosphere (dependence of temperature, density, radius, and population numbers on column mass depth) the code enables optional additional outputs for better understanding of processes in the atmosphere. The code is able to calculate model atmospheres of plane-parallel and spherically symmetric semi-infinite atmospheres as well as models of plane parallel and spherical shells. There is also an option for solution of a restricted problem of a NLTE line formation (solution of radiative transfer and statistical equilibrium for a given model atmosphere). The overall scheme of the code is presented.