

УДК 523.942

Investigation of physical conditions of the Fraunhofer lines formation in the solar photosphere

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The quantitative investigation of physical conditions in the solar atmosphere is carried out. The basis for this investigation is a catalogue of profiles and equivalent widths of lines obtained by means of solution of the radiative transfer equation using observational lines of the Fraunhofer solar spectrum. The lines with different intensities and different excitation and ionization potentials are used for gaining information about different heights of the solar atmosphere. The agreement of theoretical profiles and equivalent widths with observational data gave possibility to find out mechanisms of formation of absorption lines, account influence of non-Local Thermodynamical Equilibrium effects, etc. The solar atmosphere model (VAL – 80) was used for calculations.