



A code Raduga-6(P) for vector transport equation solution in 3-D geometry by Discrete Ordinates Method in isotropic and anisotropic (optically active) media

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Methods of numerical solution of transport equation for Stokes parameters in 3D geometry by Discrete Ordinates Method (DOM) on a supercomputer are briefly discussed in the paper. The methods and algorithms have been developed on the base of the existing DOM code Raduga-5(P) for scalar transport equation solution. A plane-parallel flux of the sunlight is given as radiation source on the upper boundary of the 3-D atmosphere with clouds and aerosols. Model includes both the light scattering and absorption by different components of the atmosphere. All necessary functions describing radiation interaction with atmosphere are calculated using Mie theory or geometrical optics (for ice crystals). Some problems of light propagation in anisotropic (optically active) media are also touched upon. Those are of importance for light propagation through atmospheric layers with oriented crystals. Initial calculation results are presented and applications to remote sensing of aerosols and clouds with account for 3D effects are given. The work is supported by the Russian Academy of Sciences (Program 2, section 2.2).