

ABOUT MATHEMATICAL MODELLING OF PEAT BLOCKS IN 3-LAYERED 3D DOMAIN¹

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In this paper we consider averaging with integral parabolic splines and finite difference methods for solving the 3-D boundary-value problem in multilayered domain. The mathematical model for calculation of concentration of metal in the 3-layered peat block is developed. A specific feature of these problems is that it is necessary to solve the 3-D boundary-value problems for elliptic type partial differential equations (PDEs) of second order with piece-wise diffusion coefficients in three layer domain. We develop here a finite-difference method for solving of a problem of the above type with periodical boundary condition in x direction. This procedure allows to reduce the 3-D problem of PDEs to a system of 2-D problems of PDSs by using circulant matrix. The operations with circulant block- matrices and vectors of the third order are obtained. The numerical results with experimental data are compared.

¹This work is partially supported by the projects 2009/0223/1DP/1.1.1.2.0/09/APIA/VIAA/008 of the European Social Fund and by the grant 09.1572 of the Latvian Council of Science.