On a Parallel Method for Solving some Boundary Value Problems in a Semistrip

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Abstract: Recently, in [DOI:10.1016/j.apnum.2014.06.014] we have proposed the method of infinite systems for solving the Dirichlet problem for elliptic equation in a semistrip. This method reduced the problem to the parallel solution of infinite systems of equations on grid lines parallel to the horizontal axis. A method for truncating these infinite systems with a given accuracy was proposed. In this work we develop the method for a biharmonic problem and a strongly mixed boundary value problem for a second order equation in a semistrip. For the latter problem a domain decomposition method is used in combination with the method of infinite systems. Numerical experiments for several examples show the effectiveness of the proposed method.

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