

## Parallel Algorithms for Initial and Boundary Value Problems for Linear Ordinary Differential Equations and Their Systems

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*Abstract:* New parallel algorithms for solving initial and boundary value problems for linear ODEs and their systems on large parallel MIMD computers are proposed.

The proposed algorithms are based on dividing a problem in similar so-called local problems, which can be solved independently and in parallel using any known (sequential or parallel) method. The solution is then built as a linear combination of the local solutions.

The recurrence relationships (for the case of non-homogeneous equations) and explicit expressions (for the case of homogeneous equations) for the coefficients of that linear combination are obtained.

Three elementary examples, illustrating the idea of the proposed approach, are given.

*Keywords:*

*AMS Subject Classification:*