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A parallel non-square tiled algorithm for solving a kind of BVP for second-order ODEs.

Wyrzykowski, Roman (ed.) et al., Parallel processing and applied mathematics. 8th international conference, PPAM 2009, Wrocław, Poland, September 13–16, 2009. Revised selected papers, Part I. Berlin: Springer (ISBN 978-3-642-14389-2/pbk). Lecture Notes in Computer Science 6067, 87-94 (2010).

Summary: The aim of this paper is to show that a kind of boundary value problem for second-order ordinary differential equations which reduces to the problem of solving tridiagonal system of linear equations with almost Toeplitz structure can be efficiently solved on modern multicore architectures using a parallel tiled algorithm based on the divide and conquer approach for solving linear recurrence systems with constant coefficients and novel data formats for dense matrices.

Keywords: BVP for ODEs; parallel non-square tiled algorithm; multicore; novel data formats for dense matrices

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