World Academy of Science, Engineering and Technology
International Journal of Mathematical and Computational Sciences
Vol:9, No:02, 2015

Parallel Asynchronous Multi-Splitting Methods for Differential Algebraic Systems

Authors : Malika Elkyal

Abstract : We consider an iterative parallel multi-splitting method for differential algebraic equations. The main feature of the proposed idea is to use the asynchronous form. We prove that the multi-splitting technique can effectively accelerate the convergent performance of the iterative process. The main characteristic of an asynchronous mode is that the local algorithm does not have to wait at predetermined messages to become available. We allow some processors to communicate more frequently than others, and we allow the communication delays to be substantial and unpredictable. Accordingly, we note that synchronous algorithms in the computer science sense are particular cases of our formulation of asynchronous one.

Keywords : parallel methods, asynchronous mode, multisplitting, differential algebraic equations
Conference Title : ICNAAMS 2015 : International Conference on Numerical Analysis, Applied Mathematics and Statistics
Conference Location : Istanbul, Türkiye
Conference Dates : February 16-17, 2015