Parallel Implementation of Waveform Relaxation Techniques for Stochastic Differential Equations

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Waveform relaxation (WR) methods have been used as one technique to solve ODEs problems in parallel. In this paper, the same technique is used to solve linear stochastic differential equations (SDEs) systems with multiplicative noise in the continuous time terms. The idea is to implement the WR methods by splitting the drift coefficient of the SDE at the equation level and to solve for different subcomponents of the system independently using previous iterates as inputs. The algorithm is written in Fortran90 with OpenMP as the application program interface (API). The performance of some simulations are observed on a SGI Origin2000 machine using different number of processors.