

Exponential Rosenbrock integrators for pricing American options

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Abstract

In this talk, exponential Rosenbrock methods are investigated for applications in finance. The methods are shown to be an alternative to other existing procedures for the numerical valuation of American type contracts. Exponential Rosenbrock methods have good stability properties, they are fully explicit and do not require the numerical solution of linear systems as in contrast to standard integrators. On the other hand, exponential Rosenbrock integrators require the evaluation of the exponential and related functions of the Jacobian matrix. We have implemented some numerical experiments in Matlab showing the reliability of the new method.

Key words. Exponential integrators, Exponential Rosenbrock methods, American options