

Speed up of derivatives pricing and calibration with SABR models in GPUs

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Resumo/Abstract:

In this work we consider some issues related to the stochastic volatility SABR model introduced in option pricing by Hagan and coworkers. More recently, different works (Hagan-Lesniewski, Mercurio-Morini and Rebonato, among others) have extended the use of SABR model in the context of LIBOR market models (SABR-LMM) to price interest rate derivatives. In practice, one drawback comes from the high computational cost, mainly associated to number of the model parameters to be calibrated. Additionally, sometimes either it is not possible to obtain an analytical approximation for the implied volatility or its expression results to be very complex, so that numerical methods in the calibration process are required.

In this work we mainly review some recently proposed simulated annealing (SA) algorithms and its implementation on Graphics Processing Units (GPUs) in order to highly speed up the calibration and pricing of different kinds of options and interest rate derivatives. Finally, some examples with real market data are presented.

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