

# Calibration and simulation of Heston stochastic volatility model

Milan Mrázek

Department of Mathematics, University of West Bohemia, Czech Republic

mrazekm@kma.zcu.cz

Heston stochastic volatility model is calibrated to market data using approach, which combines both global and local optimizers. The results are compared with parameters obtained by deterministic grid method based on brute-force search technique. Several simulation schemes are tested using the parameters obtained by calibration to real market data. Test is carried out by pricing European call options by Monte Carlo method.

## *References*

- [1] *S. Heston*: A closed-form solution for options with stochastic volatility with applications to bond and currency options. *Rev. Financ. Stud.* *6* (1993), 327–343.
- [2] *C. Kahl, P. Jäckel*: Fast strong approximation Monte Carlo schemes for stochastic volatility models. *Quant. Finance* *6* (2006), 513–536.
- [3] *M. Broadie, Ö. Kaya*: Exact simulation of stochastic volatility and other affine jump diffusion processes. *Oper. Res.* *54* (2006), 217–231.
- [4] *L. Andersen*: Simple and efficient simulation of the Heston stochastic volatility model. *J. Comput. Finance* *11* (2008), 1–42.