Student Research Group 'Stochastic Volatility Models'

# Methods of Simulation of the Heston Model: A Review

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# Heston Model Definition

Assume that the spot asset at time $t$ follows the diffusion

$$dS(t) = \mu S(t)dt + \sqrt{v(t)}S(t)dZ_1(t), \tag{1}$$

$$dv(t) = \left(\delta^2 - 2\beta v(t)\right)dt + 2\delta\sqrt{v(t)}dZ_2(t), \tag{2}$$

where $Z_1$, $Z_2$ are the correlated Wiener processes with $dZ_1 dZ_2 = \rho dt$

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# Conclusion

We introduced the three most common simulation methods for dynamics of the Heston stochastic volatility model:

1. Euler scheme;
2. Broadie-Kaya scheme;
3. Andersen scheme.