fd_gauss_vasicek1d_zcbond

Input parameters:

- Space StepNumber N_r

- Time StepNumber M

Output parameters:

- Price

The stochastic differential equation representing the short rate is given by

$$dr_t = k(\theta - r_t)dt + \sigma\, dW(t)$$

The price of the zero-coupon bond is solution of the following PDE

$$u_t + \frac{1}{2}\sigma^2 u_{rr} + [k(\theta - r)]u_r - ru = 0 \quad u(r, T, T) = 1$$

that we solve using standard Crank-Nicholson scheme. We apply Dirichlet boundary conditions at $r = r_{min}$ and $r = r_{max}$.

References