Quantitative Finance and Derivatives

Formulae

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1 Interest rate models

Vašiček model

$$dr_t = a(b - r_t)dt + \sigma dW_t$$

Cox-Ingersoll-Ross model

$$dr_t = a(b - r_t)dt + \sigma\sqrt{r_t}dW_t$$

Dothran model

$$dr_t = ar_t dt + \sigma r_t dW_t$$

Ho-Lee model

$$dr_t = \Theta(t)dt + \sigma dW_t$$

Hull-White model

$$dr_t = a(t)(b(t) - r_t)dt + \sigma(t)dW_t$$

Generalized CIR model

$$dr_t = a(t)(b(t) - r_t)dt + \sigma(t)\sqrt{r_t}dW_t$$