| **Model Name** | **Specification** |
| --- | --- |
| Brownian Motion (BM) | *dXt*=*A*(*t*)*dt*+*V*(*t*)*dWt* |
| Geometric Brownian Motion (GBM) | *dXt*=*B*(*t*)*Xtdt*+*V*(*t*)*XtdWt* |
| Constant Elasticity of Variance (CEV) | *dXt*=*B*(*t*)*Xtdt*+*V*(*t*)*Xα*(*t*)*tdWt* |
| Cox-Ingersoll-Ross (CIR) | *dXt*=*S*(*t*)(*L*(*t*)−*Xt*)*dt*+*V*(*t*)*X*12*tdWt* |
| Hull-White/Vasicek (HWV) | *dXt*=*S*(*t*)(*L*(*t*)−*Xt*)*dt*+*V*(*t*)*dWt* |
| Heston | *dX*1*t*=*B*(*t*)*X*1*tdt*+G*X*2*tX*1*tdW*1*t*  *dX*2*t*=*S*(*t*)[*L*(*t*)−*X*2*t*]*dt*+*V*(*t*)G*X*2*tdW*2*t* |
| Merton | *dXt*=*B*(*t*,*Xt*)*Xtdt*+*D*(*t*,*Xt*)*V*(*t*,*xt*)*dWt*+*Y*(*t*,*Xt*)*XtdNt* |
| Bates | Bates models are bivariate composite models. Each Bates model consists of two coupled univariate models:   * A geometric Brownian motion ([gbm](https://www.mathworks.com/help/finance/gbm.html)) model with a stochastic volatility function.   *dX*1*t*=*B*(*t*)*X*1*tdt*+G*X*2*tX*1*tdW*1*t*   * A Cox-Ingersoll-Ross ([cir](https://www.mathworks.com/help/finance/cir.html)) square root diffusion model.   *dX*2*t*=*S*(*t*)[*L*(*t*)−*X*2*t*]*dt*+*V*(*t*)G*X*2*tdW*2*t* |