

$$\underbrace{d\left[ly \right] \left(t \right)}_{d\boldsymbol{\eta}(t)} = \left(\underbrace{\left[drift_ly_ly \right]}_{\mathbf{A}} \underbrace{\left[ly \right] \left(t \right)}_{\boldsymbol{\eta}(t)} + \underbrace{\left[0 \right]}_{\mathbf{b}} \right) dt \; +$$

$$cholsdcor \left(\underbrace{\left[diffusion_ly_ly \right]}_{\mathbf{G}} \right) \underbrace{d\left[W_1 \right] \left(t \right)}_{d\mathbf{W}(t)}$$

DIFFUSION

$$\underbrace{\left[W_1 \right] \left(t + u \right)}_{\mathbf{W}(t+u)} - \underbrace{\left[W_1 \right] \left(t \right)}_{\mathbf{W}(t)} \sim \text{N} \left(\left[0 \right] , \left[u-t \right] \right)$$

$$\underbrace{\left[y \right] \left(t \right)}_{\mathbf{Y}(t)} = \underbrace{\left[1 \right]}_{\mathbf{\Lambda}} \underbrace{\left[ly \right] \left(t \right)}_{\boldsymbol{\eta}(t)} + \underbrace{\left[manifestmeans_y \right]}_{\boldsymbol{\tau}} + \underbrace{\left[0.5 \right]}_{\mathbf{\Theta}} \underbrace{\left[\epsilon_1 \right] \left(t \right)}_{\boldsymbol{\epsilon}(t)}$$

LAMBDA MANIFESTMEANS MANIFESTVAR

$$\underbrace{\left[\epsilon_1 \right] \left(t \right)}_{\boldsymbol{\epsilon}(t)} \sim \text{N} \left(\left[0 \right] , \left[1 \right] \right)$$

cholsdcor = Function converting lower tri matrix of std dev and unconstrained correlation to Cholesky factor.

See Driver & Voelkle (2018) p11.