

Exit[]

PrependTo[\$Path, "D:\\Users\\Johannes\\Promotion\\SVN Rep\\Mathematica\\Packages"];
<< JoFin`

n = 3;

S[1] = Z; S[2] = X; S[3] = v;

coefsSDE = {{v^2, 0, v (μ + i q σ θ v)}, {0, 0, 0}, {q, 0, 0}, {v σ, 0, 0}},
{1, 0, 0}, {0, 0, 0}, {0, 0, 0}}; MatrixForm /@ coefsSDE

dfkA = DFK[V, coefsSDE]

$$\left\{ \begin{pmatrix} v^2 \\ 0 \\ v (\mu + i q v \theta \sigma) \end{pmatrix}, \begin{pmatrix} 0 & 0 & 0 \\ q & 0 & 0 \\ v \sigma & 0 & 0 \end{pmatrix}, \begin{pmatrix} 1 & 0 & 0 \\ 0 & 0 & 0 \\ 0 & 0 & 0 \end{pmatrix} \right\}$$

$$v (\mu + i q v \theta \sigma) V^{(0,0,0,1)}[t, Z, X, v] + \frac{1}{2} (v^2 \sigma^2 V^{(0,0,0,2)}[t, Z, X, v] + 2 q v \sigma V^{(0,0,1,1)}[t, Z, X, v] + q^2 V^{(0,0,2,0)}[t, Z, X, v]) + v^2 V^{(0,1,0,0)}[t, Z, X, v] + V^{(1,0,0,0)}[t, Z, X, v]$$

coefsSDE2 = {{Exp[v 2], 0, μ + i q σ θ Exp[v] - σ^2 / 2}, {0, 0, 0}, {q, 0, 0}, {σ, 0, 0}},
{1, 0, 0}, {0, 0, 0}, {0, 0, 0}}; MatrixForm /@ coefsSDE2

dfkA = DFK[V, coefsSDE2]

$$\left\{ \begin{pmatrix} e^{2v} \\ 0 \\ \mu + i e^v q \theta \sigma - \frac{\sigma^2}{2} \end{pmatrix}, \begin{pmatrix} 0 & 0 & 0 \\ q & 0 & 0 \\ \sigma & 0 & 0 \end{pmatrix}, \begin{pmatrix} 1 & 0 & 0 \\ 0 & 0 & 0 \\ 0 & 0 & 0 \end{pmatrix} \right\}$$

$$\left(\mu + i e^v q \theta \sigma - \frac{\sigma^2}{2} \right) V^{(0,0,0,1)}[t, Z, X, v] + \frac{1}{2} (\sigma^2 V^{(0,0,0,2)}[t, Z, X, v] + 2 q \sigma V^{(0,0,1,1)}[t, Z, X, v] + q^2 V^{(0,0,2,0)}[t, Z, X, v]) + e^{2v} V^{(0,1,0,0)}[t, Z, X, v] + V^{(1,0,0,0)}[t, Z, X, v]$$

coef = CoefficientArrays[dfkA, q, Symmetric -> True]; MatrixForm /@ coef

$$\left\{ v \mu V^{(0,0,0,1)}[t, Z, X, v] + \frac{1}{2} v^2 \sigma^2 V^{(0,0,0,2)}[t, Z, X, v] + v^2 V^{(0,1,0,0)}[t, Z, X, v] + V^{(1,0,0,0)}[t, Z, X, v], \left(i v^2 \theta \sigma V^{(0,0,0,1)}[t, Z, X, v] + v \sigma V^{(0,0,1,1)}[t, Z, X, v] \right), \left(\frac{1}{2} V^{(0,0,2,0)}[t, Z, X, v] \right) \right\}$$