

# Partial - simulation

$$P(S_t, s_{tP} | V_{1:t}) = \overbrace{P_{\text{switch}}(S_t \xrightarrow{t} s_{tP})}^{P(S_t | S_t)} \underbrace{\mathcal{L}_t(S_t)}^{P(S_t | V_{1:t})}$$

$$P_{f,t+1}^-(s_{tP}) = F(s_{tP}) P_{f,t}^+(S_t) F(s_{tP}) + Q(s_{tP})$$

$$\log \det 2\pi P_{f,t+1}^-(s_{tP}) = \log(\det(2\pi P_{f,t+1}^-(s_{tP})))$$

$$\log(\det) = \log(\lambda_1 \cdot \lambda_2) = \log \lambda_1 + \log \lambda_2$$

$$X_{f,t+1}^-(s_{tP}) = F(s_{tP}) X_{f,t}^+(S_t)$$

$$(\mu, \Sigma)(S_t \rightarrow s_{tP}) = \text{LDSBackward}(X_{g,t+1}(s_{tP}), P_{g,t+1}(s_{tP}), X_{f,t}(S_t), P_{f,t}(S_t), X_{f,t+1}^-(s_{tP}), P_{f,t+1}^-(s_{tP}), F, Q)$$

$$z_{tP} = X_{g,t+1}(s_{tP}) - X_{f,t+1}^-(s_{tP})$$

$$tmp1 = -\frac{1}{2} z_{tP}^T (P_{f,t+1}^-(s_{tP}))^{-1} z_{tP} - \frac{1}{2} \log \det 2\pi P_{f,t+1}^-(s_{tP})$$

$$\log tmp2 = \log(P(S_t, s_{tP} | V_{1:t})) + tmp1$$

$$P(S_t, s_{tP} | V_{1:t}) = P(S_t | s_{tP}, V_{1:t})$$

רצוי לראות  
המשוואה הזו היא  
המשוואה הזו היא  
המשוואה הזו היא

$$\begin{bmatrix} 1 \\ \sqrt{S_t} \\ 1 \end{bmatrix} \begin{bmatrix} 1 \\ S_t \rightarrow s_{tP} \\ 1 \end{bmatrix} = \begin{bmatrix} 10^{-1200} \\ 1 \\ 10^{-6} \end{bmatrix} \begin{bmatrix} 1 \\ 0 \\ 0 \end{bmatrix} = \begin{bmatrix} 10^{-1200} \\ 1 \\ 10^{-6} \end{bmatrix}$$