$$H_{2t} = \begin{pmatrix} 1 & 0 \\ 0 & 0.001 \end{pmatrix}$$

$$\overline{\Sigma}_{2t} = \begin{pmatrix} 100^2 & 0 \\ 0 & 100^2 \end{pmatrix}$$

$$\overline{\Sigma}_{3t} = \begin{pmatrix} 1200^2 & -100^2 \\ -100^2 & 20 \\ 0 & 100^2 \end{pmatrix}$$

$$\overline{\Sigma}_{1t} = \begin{pmatrix} 100^2 & 0 \\ 0 & 100^2 \end{pmatrix}$$

$$H_{1t} = \begin{pmatrix} 0.707 & -0.707 \\ 0.001 & 0.001 \end{pmatrix}$$

$$Q_{1t} = H_{jt} \cdot \overline{\Sigma}_{jt} \cdot H_{jt}^T + Q$$

$$Q_{1t} = \begin{pmatrix} 5 \cdot 10^4 & 0 \\ 0 & 0.089 \end{pmatrix}$$

$$Q_{2t} = \begin{pmatrix} 5 \cdot 10^4 & 0 \\ 0 & 0.079 \end{pmatrix}$$

$$Q_{3t} = \begin{pmatrix} 8 \cdot 10^4 & -5 \\ -5 & 0.079 \end{pmatrix}$$

 $Q = \begin{pmatrix} 200^2 & 0\\ 0 & \left(\frac{15}{180}\pi\right)^2 \end{pmatrix}$

$$\vec{z}_{2t} = \begin{pmatrix} 1500 \\ 0 \end{pmatrix}$$

$$\vec{\hat{z}}_{2t} = \begin{pmatrix} 1000 \\ 0 \end{pmatrix}$$

$$\vec{\hat{z}}_{3t} = \begin{pmatrix} 2000 \\ 0 \end{pmatrix}$$

$$1 \qquad -\frac{1}{2} \left(\vec{z}_{it} - \vec{\hat{z}}_{jt} \right)^T \cdot Q_{jt}^{-1} \cdot \left(\vec{z}_{it} - \vec{\hat{z}}_{jt} \right)$$

 $\vec{z}_{1t} = \begin{pmatrix} 500\sqrt{2} \\ \arctan(1) \end{pmatrix} = \begin{pmatrix} 707.107 \\ 45^{\circ} \end{pmatrix} \quad \vec{\hat{z}}_{1t} = \begin{pmatrix} 500\sqrt{2} \\ \arctan(1) \end{pmatrix} = \begin{pmatrix} 707.107 \\ 45^{\circ} \end{pmatrix}$

$$\mathcal{L}_{jit} = \frac{1}{2\pi\sqrt{|Q_{jt}|}} e^{-\frac{1}{2} \left(\vec{z}_{it} - \vec{\hat{z}}_{jt}\right)^T \cdot Q_{jt}^{-1} \cdot \left(\vec{z}_{it} - \vec{\hat{z}}_{jt}\right)}$$

$$\mathcal{L}_{11} = 0.002 \qquad \mathcal{L}_{21} = 2.122 \cdot 10^{-5} \quad \mathcal{L}_{31} = 1.366 \cdot 10^{-7}$$

$$\mathcal{L}_{12} = 1.366 \cdot 10^{-7} \quad \mathcal{L}_{22} = 0.000208 \qquad \mathcal{L}_{32} = 0.000419$$