$$C(\rho,t) = \begin{bmatrix} S(t) \cdot e(t) \\ e_3 \\ e_4 \end{bmatrix} = \begin{bmatrix} S_1 \cdot \rho_1 + S_2 \cdot e_3 + S_3 \cdot e_5 + S_4 \cdot e_7 \\ S_1 \cdot \rho_2 + S_2 \cdot e_4 + S_3 \cdot \rho_6 + S_4 \cdot \rho_8 \\ e_3 \\ e_4 \end{bmatrix}$$

$$C(\rho,t) = \begin{bmatrix} S_1 \cdot \rho_1 + S_2 \cdot e_3 + S_3 \cdot e_5 + S_4 \cdot e_7 \\ S_1 \cdot \rho_2 + S_2 \cdot e_4 + S_3 \cdot \rho_6 + S_4 \cdot e_8 \\ e_3 \\ e_4 \end{bmatrix} = \begin{bmatrix} C_1 \\ C_2 \\ C_3 \\ C_4 \end{bmatrix}$$

$$\frac{dC(\rho,t)}{de} = \begin{bmatrix} \dfrac{\partial C_1}{\partial \rho_1} & \dfrac{\partial C_1}{\partial e_2} & \cdots & \dfrac{\partial C_1}{\partial e_8} \\ \dfrac{\partial C_2}{\partial \rho_1} & & & \\ \vdots & & & \\ \dfrac{\partial C_4}{\partial \rho_1} & \cdots & & \dfrac{\partial C_4}{\partial \rho_8} \end{bmatrix}$$

$$\begin{matrix} 1 & 2 & 3 & 4 & 5 & 6 & 7 & 8 \end{matrix}$$

$$C_e(\rho,t) = \begin{bmatrix} S_1 & 0 & S_2 & 0 & S_3 & 0 & S_4 & 0 \\ 0 & S_1 & 0 & S_2 & 0 & S_3 & 0 & S_4 \\ 0 & 0 & 1 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 1 & 0 & 0 & 0 & 0 \end{bmatrix} \qquad \begin{bmatrix} \dot{e}_1 \\ \dot{e}_2 \\ \dot{e}_3 \\ \dot{e}_4 \\ \dot{e}_5 \\ \dot{e}_6 \\ \dot{e}_7 \\ \dot{e}_8 \end{bmatrix}$$

$$C_e(\rho,t) \cdot \dot{e} = \begin{bmatrix} S_1 \dot{e}_1 + S_2 \cdot \dot{e}_3 + S_3 \cdot \dot{e}_5 + S_4 \cdot \dot{e}_7 \\ S_1 \cdot \dot{e}_2 + S_2 \cdot \dot{e}_4 + S_3 \cdot \dot{e}_6 + S_4 \cdot \dot{e}_8 \\ \dot{e}_3 \\ \dot{e}_4 \end{bmatrix}$$

$$\frac{\partial}{\partial e}\left(C_e(\rho,t) \cdot \dot{e} \right) =$$