$$\left[\begin{array}{c|c} v & d \\ \hline s & t \\ C_U & \gamma_U \\ C_V & \gamma_V \\ \hline g & v_1 \\ v_1 & a_{11} \end{array}\right] = \left[\begin{array}{c|ccc} I & 0 & 0 & 0 \\ \hline 0 & I & 0 & 0 \\ 0 & 0 & I & 0 \\ 0 & 0 & 0 & I \\ \hline u^t & 0 & 0 & 0 \\ \hline e^t & 0 & 0 & 0 \end{array}\right] \left[\begin{array}{c|ccc} A & u & U & V \\ \hline u^t & 0 & 0 & 0 \\ U^t & 0 & 0 & 0 \\ V^t & 0 & 0 & 0 \end{array}\right] \left[\begin{array}{c|c} u & e \\ \hline 0 & 0 \\ 0 & 0 \\ 0 & 0 \end{array}\right]$$

$$s = \text{sign}(\sqrt{s}, -t)$$

$$[u, v] := [u, v] - s[e, d]$$

$$[C_U; C_V] = [C_U; C_V] - s[\gamma_U; \gamma_V]$$

$$v := v - (UC_V + VC_U)$$

$$f = g - 2C_U^T C_V - s(2v_1 - sa_{11})$$

$$v := v - afu$$