

$$\begin{array}{|c|c|c|c|c|c|c|c|c|c|}
\hline
\frac{\partial R_k}{\partial \ddot{q}_k} & & & & & & & & & \\
\hline
\frac{\partial S_k}{\partial \ddot{q}_k} & \frac{\partial S_k}{\partial \dot{q}_k} & & & & & & & & \\
\hline
\frac{\partial T_k}{\partial \ddot{q}_k} & \frac{\partial T_k}{\partial \dot{q}_k} & \frac{\partial T_k}{\partial q_k} & & & & & & & \\
\hline
\frac{\partial R_{k+1}}{\partial \ddot{q}_k} & \frac{\partial R_{k+1}}{\partial \dot{q}_k} & \frac{\partial R_{k+1}}{\partial q_k} & \frac{\partial R_{k+1}}{\partial \ddot{q}_{k+1}} & & & & & & \\
\hline
\frac{\partial S_{k+1}}{\partial \ddot{q}_k} & \frac{\partial S_{k+1}}{\partial \dot{q}_k} & \frac{\partial S_{k+1}}{\partial q_k} & \frac{\partial S_{k+1}}{\partial \ddot{q}_{k+1}} & \frac{\partial S_{k+1}}{\partial \dot{q}_{k+1}} & & & & & \\
\hline
\frac{\partial T_{k+1}}{\partial \ddot{q}_k} & \frac{\partial T_{k+1}}{\partial \dot{q}_k} & \frac{\partial T_{k+1}}{\partial q_k} & \frac{\partial T_{k+1}}{\partial \ddot{q}_{k+1}} & \frac{\partial T_{k+1}}{\partial \dot{q}_{k+1}} & \frac{\partial T_{k+1}}{\partial q_{k+1}} & & & & \\
\hline
\frac{\partial R_{k+2}}{\partial \ddot{q}_k} & \frac{\partial R_{k+2}}{\partial \dot{q}_k} & \frac{\partial R_{k+2}}{\partial q_k} & \frac{\partial R_{k+2}}{\partial \ddot{q}_{k+1}} & \frac{\partial R_{k+2}}{\partial \dot{q}_{k+1}} & \frac{\partial R_{k+2}}{\partial q_{k+1}} & \frac{\partial R_{k+2}}{\partial \ddot{q}_{k+2}} & & & \\
\hline
\frac{\partial S_{k+2}}{\partial \ddot{q}_k} & \frac{\partial S_{k+2}}{\partial \dot{q}_k} & \frac{\partial S_{k+2}}{\partial q_k} & \frac{\partial S_{k+2}}{\partial \ddot{q}_{k+1}} & \frac{\partial S_{k+2}}{\partial \dot{q}_{k+1}} & \frac{\partial S_{k+2}}{\partial q_{k+1}} & \frac{\partial S_{k+2}}{\partial \ddot{q}_{k+2}} & \frac{\partial S_{k+2}}{\partial \dot{q}_{k+2}} & & \\
\hline
\frac{\partial T_{k+2}}{\partial \ddot{q}_k} & \frac{\partial T_{k+2}}{\partial \dot{q}_k} & \frac{\partial T_{k+2}}{\partial q_k} & \frac{\partial T_{k+2}}{\partial \ddot{q}_{k+1}} & \frac{\partial T_{k+2}}{\partial \dot{q}_{k+1}} & \frac{\partial T_{k+2}}{\partial q_{k+1}} & \frac{\partial T_{k+2}}{\partial \ddot{q}_{k+2}} & \frac{\partial T_{k+2}}{\partial \dot{q}_{k+2}} & \frac{\partial T_{k+2}}{\partial q_{k+2}} & \\
\hline
\end{array}
\begin{array}{|c|}
\hline
\Delta \ddot{q}_k \\
\hline
\Delta \dot{q}_k \\
\hline
\Delta q_k \\
\hline
\Delta \ddot{q}_{k+1} \\
\hline
\Delta \dot{q}_{k+1} \\
\hline
\Delta q_{k+1} \\
\hline
\Delta \ddot{q}_{k+2} \\
\hline
\Delta \dot{q}_{k+2} \\
\hline
\Delta q_{k+2} \\
\hline
\end{array}
= -
\begin{array}{|c|}
\hline
R_k \\
\hline
S_k \\
\hline
T_k \\
\hline
R_{k+1} \\
\hline
S_{k+1} \\
\hline
T_{k+1} \\
\hline
R_{k+2} \\
\hline
S_{k+2} \\
\hline
T_{k+2} \\
\hline
\end{array}$$