

$$\begin{bmatrix}
\mu_1 l_1^2 (\cos(q_1))^2 + \mu_2 l_2^2 - \mu_2 l_2^2 (\cos(q_2))^2 + \mu_2 l_2^2 (\cos(q_2))^2 (\cos(q_3))^2 + \mu_3 q_4^2 & -\mu_2 l_2^2 \cos(q_2) (\sin(q_3))^2 \sin(q_2) \\
-\mu_2 l_2^2 \cos(q_2) (\sin(q_3))^2 \sin(q_2) & \mu_1 l_1^2 + \mu_2 l_2^2 (\cos(q_2))^2 - \mu_2 l_2^2 (\cos(q_2))^2 (\cos(q_3))^2 + \mu_2 l_2^2 (\cos(q_3))^2 + \mu_3 q_4^2 \\
-\mu_1 l_1^2 \sin(q_1) \cos(q_1) - \mu_2 l_2^2 \cos(q_2) \sin(q_3) \cos(q_3) & -\mu_2 l_2^2 \sin(q_2) \sin(q_3) \cos(q_3)
\end{bmatrix} \quad (1)$$