

$$\begin{aligned}
& -k_{10} \left( \zeta_6(t) - \zeta_7(t) \right) + k_{10} \left( \zeta_7(t) - \zeta_8(t) \right) + \\
& 2 m_0 \left( \cos(\theta(t)) R(t) - \cos(\alpha(t)) \cos(\theta(t) + \psi(t)) \left( \frac{3 L_0}{10} + \eta_6(t) + \eta_7(t) \right) \right) \zeta_7'(t) \\
& \left( \cos(\theta(t)) R'(t) + \cos(\theta(t) + \psi(t)) \sin(\alpha(t)) \left( \frac{3 L_0}{10} + \eta_6(t) + \eta_7(t) \right) \alpha'(t) - \right. \\
& \quad \left. R(t) \sin(\theta(t)) \theta'(t) + \cos(\alpha(t)) \sin(\theta(t) + \psi(t)) \left( \frac{3 L_0}{10} + \eta_6(t) + \eta_7(t) \right) (\theta'(t) + \psi'(t)) - \right. \\
& \quad \left. \cos(\alpha(t)) \cos(\theta(t) + \psi(t)) (\eta_6'(t) + \eta_7'(t)) \right) + \\
& \left( m_0 \left( \cos(\theta(t)) R(t) - \cos(\alpha(t)) \cos(\theta(t) + \psi(t)) \left( \frac{3 L_0}{10} + \eta_6(t) + \eta_7(t) \right) \right)^2 + i_{xm7} \right) \zeta_7''(t) = \\
& c_{10} (\zeta_6'(t) - \zeta_7'(t)) - c_{10} (\zeta_7'(t) - \zeta_8'(t))
\end{aligned}$$