

Appendix:

$$T_{ij}^{11} = A_{11} \sum_{k=1}^N C_{ik}^{(2)}(u_0)_{kj} + A_{66} \sum_{l=1}^M R_{jl}^{(2)}(u_0)_{il} - \lambda \left[A_{11} \left(\sum_{k=1}^N C_{ik}^{(4)}(u_0)_{kj} + \sum_{k=1}^N \sum_{l=1}^M C_{ik}^{(2)} R_{jl}^{(2)}(u_0)_{kl} \right) \right. \\ \left. + A_{66} \left(\sum_{k=1}^N \sum_{l=1}^M C_{ik}^{(2)} R_{jl}^{(2)}(u_0)_{kl} + \sum_{l=1}^M R_{jl}^{(4)}(u_0)_{il} \right) \right] - I_0 \frac{\partial^2(u_0)_{ij}}{\partial t^2}$$

$$T_{ij}^{12} = (A_{12} + A_{66}) \sum_{k=1}^N \sum_{l=1}^M C_{ik}^{(1)} R_{jl}^{(1)}(v_0)_{kl} - \lambda \left[(A_{12} + A_{66}) \left(\sum_{k=1}^N \sum_{l=1}^M C_{ik}^{(3)} R_{jl}^{(1)}(v_0)_{kl} + \sum_{k=1}^N \sum_{l=1}^M C_{ik}^{(1)} R_{jl}^{(3)}(v_0)_{kl} \right) \right]$$

$$T_{ij}^{13} = -B_{11} \sum_{k=1}^N C_{ik}^{(3)}(w_b)_{kj} - (B_{12} + 2B_{66}) \sum_{k=1}^N \sum_{l=1}^M C_{ik}^{(1)} R_{jl}^{(2)}(w_b)_{kl} \\ - \lambda \left[-B_{11} \left(\sum_{k=1}^N C_{ik}^{(5)}(w_b)_{kj} + \sum_{k=1}^N \sum_{l=1}^M C_{ik}^{(3)} R_{jl}^{(2)}(w_b)_{kl} \right) \right. \\ \left. - (B_{12} + 2B_{66}) \left(\sum_{k=1}^N \sum_{l=1}^M C_{ik}^{(3)} R_{jl}^{(2)}(w_b)_{kl} + \sum_{k=1}^N \sum_{l=1}^M C_{ik}^{(1)} R_{jl}^{(4)}(w_b)_{kl} \right) \right] + I_1 \sum_{k=1}^N C_{ik}^{(1)} \frac{\partial^2(w_b)_{kj}}{\partial t^2}$$

$$T_{ij}^{14} = -B_{11}^s \sum_{k=1}^N C_{ik}^{(3)}(w_s)_{kj} - (B_{12}^s + 2B_{66}^s) \sum_{k=1}^N \sum_{l=1}^M C_{ik}^{(1)} R_{jl}^{(2)}(w_s)_{kl} \\ - \lambda \left[-B_{11}^s \left(\sum_{k=1}^N C_{ik}^{(5)}(w_s)_{kj} + \sum_{k=1}^N \sum_{l=1}^M C_{ik}^{(3)} R_{jl}^{(2)}(w_s)_{kl} \right) \right. \\ \left. - (B_{12}^s + 2B_{66}^s) \left(\sum_{k=1}^N \sum_{l=1}^M C_{ik}^{(3)} R_{jl}^{(2)}(w_s)_{kl} + \sum_{k=1}^N \sum_{l=1}^M C_{ik}^{(1)} R_{jl}^{(4)}(w_s)_{kl} \right) \right] + J_1 \sum_{k=1}^N C_{ik}^{(1)} \frac{\partial^2(w_s)_{kj}}{\partial t^2}$$

$$T_{ij}^{15} = P_{13} \sum_{k=1}^N C_{ik}^{(1)}(\varphi_z)_{kj} - \lambda P_{13} \left(\sum_{k=1}^N C_{ik}^{(3)}(\varphi_z)_{kj} + \sum_{k=1}^N \sum_{l=1}^M C_{ik}^{(1)} R_{jl}^{(2)}(\varphi_z)_{kl} \right)$$

$$T_{ij}^{21} = (A_{12} + A_{66}) \sum_{k=1}^N \sum_{l=1}^M C_{ik}^{(1)} R_{jl}^{(1)}(u_0)_{kl} - \lambda \left[(A_{12} + A_{66}) \left(\sum_{k=1}^N \sum_{l=1}^M C_{ik}^{(3)} R_{jl}^{(1)}(u_0)_{kl} + \sum_{k=1}^N \sum_{l=1}^M C_{ik}^{(1)} R_{jl}^{(3)}(u_0)_{kl} \right) \right]$$

$$T_{ij}^{22} = A_{22} \sum_{l=1}^M R_{jl}^{(2)}(v_0)_{il} + A_{66} \sum_{k=1}^N C_{ik}^{(2)}(v_0)_{kj} - \lambda \left[A_{22} \left(\sum_{l=1}^M R_{jl}^{(4)}(v_0)_{il} + \sum_{k=1}^N \sum_{l=1}^M C_{ik}^{(2)} R_{jl}^{(2)}(v_0)_{kl} \right) \right. \\ \left. + A_{66} \left(\sum_{k=1}^N \sum_{l=1}^M C_{ik}^{(2)} R_{jl}^{(2)}(v_0)_{kl} + \sum_{k=1}^N C_{ik}^{(4)}(v_0)_{kj} \right) \right] - I_0 \frac{\partial^2(v_0)_{ij}}{\partial t^2}$$

$$T_{ij}^{23} = -B_{22} \sum_{l=1}^M R_{jl}^{(3)}(w_b)_{il} - (B_{12} + 2B_{66}) \sum_{k=1}^N \sum_{l=1}^M C_{ik}^{(2)} R_{jl}^{(1)}(w_b)_{kl} \\ - \lambda \left[-B_{22} \left(\sum_{l=1}^M R_{jl}^{(5)}(w_b)_{il} + \sum_{k=1}^N \sum_{l=1}^M C_{ik}^{(2)} R_{jl}^{(3)}(w_b)_{kl} \right) \right. \\ \left. - (B_{12} + 2B_{66}) \left(\sum_{k=1}^N \sum_{l=1}^M C_{ik}^{(2)} R_{jl}^{(3)}(w_b)_{kl} + \sum_{k=1}^N \sum_{l=1}^M C_{ik}^{(4)} R_{jl}^{(1)}(w_b)_{kl} \right) \right] + I_1 \sum_{l=1}^M R_{jl}^{(1)} \frac{\partial^2(w_b)_{il}}{\partial t^2}$$

$$T_{ij}^{24} = -B_{22}^s \sum_{l=1}^M R_{jl}^{(3)}(w_s)_{il} - (B_{12}^s + 2B_{66}^s) \sum_{k=1}^N \sum_{l=1}^M C_{ik}^{(2)} R_{jl}^{(1)}(w_s)_{kl} \\ - \lambda \left[-B_{22}^s \left(\sum_{l=1}^M R_{jl}^{(5)}(w_s)_{il} + \sum_{k=1}^N \sum_{l=1}^M C_{ik}^{(2)} R_{jl}^{(3)}(w_s)_{kl} \right) \right. \\ \left. - (B_{12}^s + 2B_{66}^s) \left(\sum_{k=1}^N \sum_{l=1}^M C_{ik}^{(2)} R_{jl}^{(3)}(w_s)_{kl} + \sum_{k=1}^N \sum_{l=1}^M C_{ik}^{(4)} R_{jl}^{(1)}(w_s)_{kl} \right) \right] + J_1 \sum_{l=1}^M R_{jl}^{(1)} \frac{\partial^2(w_s)_{il}}{\partial t^2}$$

$$\begin{aligned}
T_{ij}^{25} &= P_{23} \sum_{l=1}^M R_{jl}^{(1)}(\varphi_z)_{il} - \lambda P_{23} \left(\sum_{l=1}^M R_{jl}^{(3)}(\varphi_z)_{il} + \sum_{k=1}^N \sum_{l=1}^M C_{ik}^{(2)} R_{jl}^{(1)}(\varphi_z)_{kl} \right) \\
T_{ij}^{31} &= B_{11} \sum_{k=1}^N C_{ik}^{(3)}(u_0)_{kj} + (B_{12} + 2B_{66}) \sum_{k=1}^N \sum_{l=1}^M C_{ik}^{(1)} R_{jl}^{(2)}(u_0)_{kl} - \lambda \left[B_{11} \left(\sum_{k=1}^N C_{ik}^{(5)}(u_0)_{kj} + \sum_{k=1}^N \sum_{l=1}^M C_{ik}^{(3)} R_{jl}^{(2)}(u_0)_{kl} \right) \right. \\
&\quad \left. + (B_{12} + 2B_{66}) \left(\sum_{k=1}^N \sum_{l=1}^M C_{ik}^{(3)} R_{jl}^{(2)}(u_0)_{kl} + \sum_{k=1}^N \sum_{l=1}^M C_{ik}^{(1)} R_{jl}^{(4)}(u_0)_{kl} \right) \right] - I_1 \sum_{k=1}^N C_{ik}^{(1)} \frac{\partial^2(u_0)_{kj}}{\partial t^2} \\
T_{ij}^{32} &= B_{22} \sum_{l=1}^M R_{jl}^{(3)}(v_0)_{il} + (B_{12} + 2B_{66}) \sum_{k=1}^N \sum_{l=1}^M C_{ik}^{(2)} R_{jl}^{(1)}(v_0)_{kl} - \lambda \left[B_{22} \left(\sum_{l=1}^M R_{jl}^{(5)}(v_0)_{il} + \sum_{k=1}^N \sum_{l=1}^M C_{ik}^{(2)} R_{jl}^{(3)}(v_0)_{kl} \right) \right. \\
&\quad \left. + (B_{12} + 2B_{66}) \left(\sum_{k=1}^N \sum_{l=1}^M C_{ik}^{(2)} R_{jl}^{(3)}(v_0)_{kl} + \sum_{k=1}^N \sum_{l=1}^M C_{ik}^{(4)} R_{jl}^{(1)}(v_0)_{kl} \right) \right] - I_1 \sum_{l=1}^M R_{jl}^{(1)} \frac{\partial^2(v_0)_{il}}{\partial t^2} \\
T_{ij}^{33} &= -D_{11} \sum_{k=1}^N C_{ik}^{(4)}(w_b)_{kj} - D_{22} \sum_{l=1}^M R_{jl}^{(4)}(w_b)_{il} - 2(D_{12} + 2D_{66}) \sum_{k=1}^N \sum_{l=1}^M C_{ik}^{(2)} R_{jl}^{(2)}(w_b)_{kl} \\
&\quad - \lambda \left[-D_{11} \left(\sum_{k=1}^N C_{ik}^{(6)}(w_b)_{kj} + \sum_{k=1}^N \sum_{l=1}^M C_{ik}^{(4)} R_{jl}^{(2)}(w_b)_{kl} \right) - D_{22} \left(\sum_{k=1}^N \sum_{l=1}^M C_{ik}^{(2)} R_{jl}^{(4)}(w_b)_{kl} + \sum_{l=1}^M R_{jl}^{(6)}(w_b)_{il} \right) \right. \\
&\quad \left. - 2(D_{12} + 2D_{66}) \left(\sum_{k=1}^N \sum_{l=1}^M C_{ik}^{(2)} R_{jl}^{(4)}(w_b)_{kl} + \sum_{k=1}^N \sum_{l=1}^M C_{ik}^{(4)} R_{jl}^{(2)}(w_b)_{kl} \right) \right] + \left[(-N_x^T) \sum_{k=1}^N C_{ik}^{(2)}(w_b)_{kj} \right. \\
&\quad \left. - (N_y^T) \sum_{l=1}^M R_{jl}^{(2)}(w_b)_{il} - \left(\left(\frac{K_l K_u}{K_l + K_u} \right) (w_b)_{ij} - \left(\frac{K_s K_u}{K_l + K_u} \right) \left(\sum_{k=1}^N C_{ik}^{(2)}(w_b)_{kj} + \sum_{l=1}^M R_{jl}^{(2)}(w_b)_{il} \right) \right) \right] \\
&\quad - I_0 \frac{\partial^2(w_b)_{ij}}{\partial t^2} + I_2 \left(\sum_{k=1}^N C_{ik}^{(2)} \frac{\partial^2(w_b)_{kj}}{\partial t^2} + \sum_{l=1}^M R_{jl}^{(2)} \frac{\partial^2(w_b)_{il}}{\partial t^2} \right) \\
T_{ij}^{34} &= -D_{11}^s \sum_{k=1}^N C_{ik}^{(4)}(w_s)_{kj} - D_{22}^s \sum_{l=1}^M R_{jl}^{(4)}(w_s)_{il} - 2(D_{12}^s + 2D_{66}^s) \sum_{k=1}^N \sum_{l=1}^M C_{ik}^{(2)} R_{jl}^{(2)}(w_s)_{kl} \\
&\quad - \lambda \left[-D_{11}^s \left(\sum_{k=1}^N C_{ik}^{(6)}(w_s)_{kj} + \sum_{k=1}^N \sum_{l=1}^M C_{ik}^{(4)} R_{jl}^{(2)}(w_s)_{kl} \right) - D_{22}^s \left(\sum_{k=1}^N \sum_{l=1}^M C_{ik}^{(2)} R_{jl}^{(4)}(w_s)_{kl} + \sum_{l=1}^M R_{jl}^{(6)}(w_s)_{il} \right) \right. \\
&\quad \left. - 2(D_{12}^s + 2D_{66}^s) \left(\sum_{k=1}^N \sum_{l=1}^M C_{ik}^{(2)} R_{jl}^{(4)}(w_s)_{kl} + \sum_{k=1}^N \sum_{l=1}^M C_{ik}^{(4)} R_{jl}^{(2)}(w_s)_{kl} \right) \right] + \left[(-N_x^T) \sum_{k=1}^N C_{ik}^{(2)}(w_s)_{kj} \right. \\
&\quad \left. - (N_y^T) \sum_{l=1}^M R_{jl}^{(2)}(w_s)_{il} - \left(\left(\frac{K_l K_u}{K_l + K_u} \right) (w_s)_{ij} - \left(\frac{K_s K_u}{K_l + K_u} \right) \left(\sum_{k=1}^N C_{ik}^{(2)}(w_s)_{kj} + \sum_{l=1}^M R_{jl}^{(2)}(w_s)_{il} \right) \right) \right] \\
&\quad - I_0 \frac{\partial^2(w_s)_{ij}}{\partial t^2} + J_2 \left(\sum_{k=1}^N C_{ik}^{(2)} \frac{\partial^2(w_s)_{kj}}{\partial t^2} + \sum_{l=1}^M R_{jl}^{(2)} \frac{\partial^2(w_s)_{il}}{\partial t^2} \right) \\
T_{ij}^{35} &= S_{13} \sum_{k=1}^N C_{ik}^{(2)}(\varphi_z)_{kj} + S_{23} \sum_{l=1}^M R_{jl}^{(2)}(\varphi_z)_{il} - \lambda \left[S_{13} \left(\sum_{k=1}^N C_{ik}^{(4)}(\varphi_z)_{kj} + \sum_{k=1}^N \sum_{l=1}^M C_{ik}^{(2)} R_{jl}^{(2)}(\varphi_z)_{kl} \right) \right. \\
&\quad \left. + S_{23} \left(\sum_{k=1}^N \sum_{l=1}^M C_{ik}^{(2)} R_{jl}^{(2)}(\varphi_z)_{kl} + \sum_{l=1}^M R_{jl}^{(4)}(\varphi_z)_{il} \right) \right] - g N_x^T \sum_{k=1}^N C_{ik}^{(2)}(\varphi_z)_{kj} \\
&\quad - g N_y^T \sum_{l=1}^M R_{jl}^{(2)}(\varphi_z)_{il} - g \left(\left(\frac{K_l K_u}{K_l + K_u} \right) (\varphi_z)_{ij} - \left(\frac{K_s K_u}{K_l + K_u} \right) \left(\sum_{k=1}^N C_{ik}^{(2)}(\varphi_z)_{kj} + \sum_{l=1}^M R_{jl}^{(2)}(\varphi_z)_{il} \right) \right) - J_0 \frac{\partial^2(\varphi_z)_{ij}}{\partial t^2} \\
T_{ij}^{41} &= B_{11}^s \sum_{k=1}^N C_{ik}^{(3)}(u_0)_{kj} + (B_{12}^s + 2B_{66}^s) \sum_{k=1}^N \sum_{l=1}^M C_{ik}^{(1)} R_{jl}^{(2)}(u_0)_{kl} - \lambda \left[B_{11}^s \left(\sum_{k=1}^N C_{ik}^{(5)}(u_0)_{kj} + \sum_{k=1}^N \sum_{l=1}^M C_{ik}^{(3)} R_{jl}^{(2)}(u_0)_{kl} \right) \right. \\
&\quad \left. + (B_{12}^s + 2B_{66}^s) \left(\sum_{k=1}^N \sum_{l=1}^M C_{ik}^{(3)} R_{jl}^{(2)}(u_0)_{kl} + \sum_{k=1}^N \sum_{l=1}^M C_{ik}^{(1)} R_{jl}^{(4)}(u_0)_{kl} \right) \right] - J_1 \sum_{k=1}^N C_{ik}^{(1)} \frac{\partial^2(u_0)_{kj}}{\partial t^2}
\end{aligned}$$

$$T_{ij}^{42} = B_{22}^s \sum_{l=1}^M R_{jl}^{(3)}(v_0)_{il} + (B_{12}^s + 2B_{66}^s) \sum_{k=1}^N \sum_{l=1}^M C_{ik}^{(2)} R_{jl}^{(1)}(v_0)_{kl} - \lambda \left[B_{22}^s \left(\sum_{l=1}^M R_{jl}^{(5)}(v_0)_{il} + \sum_{k=1}^N \sum_{l=1}^M C_{ik}^{(2)} R_{jl}^{(3)}(v_0)_{kl} \right) \right. \\ \left. + (B_{12}^s + 2B_{66}^s) \left(\sum_{k=1}^N \sum_{l=1}^M C_{ik}^{(2)} R_{jl}^{(3)}(v_0)_{kl} + \sum_{k=1}^N \sum_{l=1}^M C_{ik}^{(4)} R_{jl}^{(1)}(v_0)_{kl} \right) \right] - J_1 \sum_{l=1}^M R_{jl}^{(1)} \frac{\partial^2(v_0)_{il}}{\partial t^2}$$

$$T_{ij}^{43} = -D_{11}^s \sum_{k=1}^N C_{ik}^{(4)}(w_b)_{kj} - D_{22}^s \sum_{l=1}^M R_{jl}^{(4)}(w_b)_{il} - 2(D_{12}^s + 2D_{66}^s) \sum_{k=1}^N \sum_{l=1}^M C_{ik}^{(2)} R_{jl}^{(2)}(w_b)_{kl} \\ - \lambda \left[-D_{11}^s \left(\sum_{k=1}^N C_{ik}^{(6)}(w_b)_{kj} + \sum_{k=1}^N \sum_{l=1}^M C_{ik}^{(4)} R_{jl}^{(2)}(w_b)_{kl} \right) - D_{22}^s \left(\sum_{k=1}^N \sum_{l=1}^M C_{ik}^{(2)} R_{jl}^{(4)}(w_b)_{kl} + \sum_{l=1}^M R_{jl}^{(6)}(w_b)_{il} \right) \right. \\ \left. - 2(D_{12}^s + 2D_{66}^s) \left(\sum_{k=1}^N \sum_{l=1}^M C_{ik}^{(2)} R_{jl}^{(4)}(w_b)_{kl} + \sum_{k=1}^N \sum_{l=1}^M C_{ik}^{(4)} R_{jl}^{(2)}(w_b)_{kl} \right) \right] + \left[-N_x^T \sum_{k=1}^N C_{ik}^{(2)}(w_b)_{kj} \right. \\ \left. - N_y^T \sum_{l=1}^M R_{jl}^{(2)}(w_b)_{il} - \left(\frac{K_l K_u}{K_l + K_u} \right) (w_b)_{ij} - \left(\frac{K_s K_u}{K_l + K_u} \right) \left(\sum_{k=1}^N C_{ik}^{(2)}(w_b)_{kj} + \sum_{l=1}^M R_{jl}^{(2)}(w_b)_{il} \right) \right] \\ - I_0 \frac{\partial^2(w_b)_{ij}}{\partial t^2} + J_2 \left(\sum_{k=1}^N C_{ik}^{(2)} \frac{\partial^2(w_b)_{kj}}{\partial t^2} + \sum_{l=1}^M R_{jl}^{(2)} \frac{\partial^2(w_b)_{il}}{\partial t^2} \right) \Bigg]$$

$$T_{ij}^{44} = -H_{11} \sum_{k=1}^N C_{ik}^{(4)}(w_s)_{kj} - H_{22} \sum_{l=1}^M R_{jl}^{(4)}(w_s)_{il} - 2(H_{12} + 2H_{66}) \sum_{k=1}^N \sum_{l=1}^M C_{ik}^{(2)} R_{jl}^{(2)}(w_s)_{kl} \\ + A_{55}^s \sum_{k=1}^N C_{ik}^{(2)}(w_s)_{kj} + A_{44}^s \sum_{l=1}^M R_{jl}^{(2)}(w_s)_{il} - \lambda \left[-H_{11} \left(\sum_{k=1}^N C_{ik}^{(6)}(w_s)_{kj} + \sum_{k=1}^N \sum_{l=1}^M C_{ik}^{(4)} R_{jl}^{(2)}(w_s)_{kl} \right) \right. \\ \left. - H_{22} \left(\sum_{k=1}^N \sum_{l=1}^M C_{ik}^{(2)} R_{jl}^{(4)}(w_s)_{kl} + \sum_{l=1}^M R_{jl}^{(6)}(w_s)_{il} \right) - 2(H_{12} + 2H_{66}) \left(\sum_{k=1}^N \sum_{l=1}^M C_{ik}^{(2)} R_{jl}^{(4)}(w_s)_{kl} + \sum_{k=1}^N \sum_{l=1}^M C_{ik}^{(4)} R_{jl}^{(2)}(w_s)_{kl} \right) \right. \\ \left. + A_{55}^s \left(\sum_{k=1}^N C_{ik}^{(4)}(w_s)_{kj} + \sum_{k=1}^N \sum_{l=1}^M C_{ik}^{(2)} R_{jl}^{(2)}(w_s)_{kl} \right) + A_{44}^s \left(\sum_{k=1}^N \sum_{l=1}^M C_{ik}^{(2)} R_{jl}^{(2)}(w_s)_{kl} + \sum_{l=1}^M R_{jl}^{(4)}(w_s)_{il} \right) \right] \\ + \left[-N_x^T \sum_{k=1}^N C_{ik}^{(2)}(w_s)_{kj} - N_y^T \sum_{l=1}^M R_{jl}^{(2)}(w_s)_{il} - \left(\frac{K_l K_u}{K_l + K_u} \right) (w_s)_{ij} - \left(\frac{K_s K_u}{K_l + K_u} \right) \left(\sum_{k=1}^N C_{ik}^{(2)}(w_s)_{kj} + \sum_{l=1}^M R_{jl}^{(2)}(w_s)_{il} \right) \right] \\ - I_0 \frac{\partial^2(w_s)_{ij}}{\partial t^2} + K_2 \left(\sum_{k=1}^N C_{ik}^{(2)} \frac{\partial^2(w_s)_{kj}}{\partial t^2} + \sum_{l=1}^M R_{jl}^{(2)} \frac{\partial^2(w_s)_{il}}{\partial t^2} \right) \Bigg]$$

$$T_{ij}^{45} = (S_{13}^s + A_{55}^s) \sum_{k=1}^N C_{ik}^{(2)}(\varphi_z)_{kj} + (S_{23}^s + A_{44}^s) \sum_{l=1}^M R_{jl}^{(2)}(\varphi_z)_{il} \\ - \lambda \left[(S_{13}^s + A_{55}^s) \left(\sum_{k=1}^N C_{ik}^{(4)}(\varphi_z)_{kj} + \sum_{k=1}^N \sum_{l=1}^M C_{ik}^{(2)} R_{jl}^{(2)}(\varphi_z)_{kl} \right) \right. \\ \left. + (S_{23}^s + A_{44}^s) \left(\sum_{k=1}^N \sum_{l=1}^M C_{ik}^{(2)} R_{jl}^{(2)}(\varphi_z)_{kl} + \sum_{l=1}^M R_{jl}^{(4)}(\varphi_z)_{il} \right) \right] - g N_x^T \sum_{k=1}^N C_{ik}^{(2)}(\varphi_z)_{kj} - g N_y^T \sum_{l=1}^M R_{jl}^{(2)}(\varphi_z)_{il} \\ - g \left(\left(\frac{K_l K_u}{K_l + K_u} \right) (\varphi_z)_{ij} - \left(\frac{K_s K_u}{K_l + K_u} \right) \left(\sum_{k=1}^N C_{ik}^{(2)}(\varphi_z)_{kj} + \sum_{l=1}^M R_{jl}^{(2)}(\varphi_z)_{il} \right) \right) - J_0 \frac{\partial^2(\varphi_z)_{ij}}{\partial t^2}$$

$$T_{ij}^{51} = -P_{13} \sum_{k=1}^N C_{ik}^{(1)}(u_0)_{kj} + \lambda P_{13} \left(\sum_{k=1}^N C_{ik}^{(3)}(u_0)_{kj} + \sum_{k=1}^N \sum_{l=1}^M C_{ik}^{(1)} R_{jl}^{(2)}(u_0)_{kl} \right)$$

$$T_{ij}^{52} = -P_{23} \sum_{l=1}^M R_{jl}^{(1)}(v_0)_{il} + \lambda P_{23} \left(\sum_{l=1}^M R_{jl}^{(3)}(v_0)_{il} + \sum_{k=1}^N \sum_{l=1}^M C_{ik}^{(2)} R_{jl}^{(1)}(v_0)_{kl} \right)$$

$$\begin{aligned}
T_{ij}^{53} = & S_{13} \sum_{k=1}^N C_{ik}^{(2)}(w_b)_{kj} + S_{23} \sum_{l=1}^M R_{jl}^{(2)}(w_b)_{il} - \lambda \left[S_{13} \left(\sum_{k=1}^N C_{ik}^{(4)}(w_b)_{kj} + \sum_{k=1}^N \sum_{l=1}^M C_{ik}^{(2)} R_{jl}^{(2)}(w_b)_{kl} \right) \right. \\
& + S_{23} \left(\sum_{k=1}^N \sum_{l=1}^M C_{ik}^{(2)} R_{jl}^{(2)}(w_b)_{kl} + \sum_{l=1}^M R_{jl}^{(4)}(w_b)_{il} \right) \left. \right] - N_x^T \sum_{k=1}^N C_{ik}^{(2)}(w_b)_{kj} - N_y^T \sum_{l=1}^M R_{jl}^{(2)}(w_b)_{il} \\
& - \left(\left(\frac{K_l K_u}{K_l + K_u} \right) (w_b)_{ij} - \left(\frac{K_s K_u}{K_l + K_u} \right) \left(\sum_{k=1}^N C_{ik}^{(2)}(w_b)_{kj} + \sum_{l=1}^M R_{jl}^{(2)}(w_b)_{il} \right) \right) - J_0 \frac{\partial^2 (w_b)_{ij}}{\partial t^2}
\end{aligned}$$

$$\begin{aligned}
T_{ij}^{54} = & (S_{13}^s + A_{55}^s) \sum_{k=1}^N C_{ik}^{(2)}(w_s)_{kj} + (S_{23}^s + A_{44}^s) \sum_{l=1}^M R_{jl}^{(2)}(w_s)_{il} \\
& - \lambda \left[(S_{13}^s + A_{55}^s) \left(\sum_{k=1}^N C_{ik}^{(4)}(w_s)_{kj} + \sum_{k=1}^N \sum_{l=1}^M C_{ik}^{(2)} R_{jl}^{(2)}(w_s)_{kl} \right) + (S_{23}^s + A_{44}^s) \left(\sum_{k=1}^N \sum_{l=1}^M C_{ik}^{(2)} R_{jl}^{(2)}(w_s)_{kl} + \sum_{l=1}^M R_{jl}^{(4)}(w_s)_{il} \right) \right] \\
& - N_x^T \sum_{k=1}^N C_{ik}^{(2)}(w_s)_{kj} - N_y^T \sum_{l=1}^M R_{jl}^{(2)}(w_s)_{il} - \left(\left(\frac{K_l K_u}{K_l + K_u} \right) (w_s)_{ij} - \left(\frac{K_s K_u}{K_l + K_u} \right) \left(\sum_{k=1}^N C_{ik}^{(2)}(w_s)_{kj} + \sum_{l=1}^M R_{jl}^{(2)}(w_s)_{il} \right) \right) - J_0 \frac{\partial^2 (w_s)_{ij}}{\partial t^2}
\end{aligned}$$

$$\begin{aligned}
T_{ij}^{55} = & A_{55}^s \sum_{k=1}^N C_{ik}^{(2)}(\varphi_z)_{kj} + A_{44}^s \sum_{l=1}^M R_{jl}^{(2)}(\varphi_z)_{il} - L_{33}(\varphi_z)_{ij} \\
& - \lambda \left[A_{55}^s \left(\sum_{k=1}^N C_{ik}^{(4)}(\varphi_z)_{kj} + \sum_{k=1}^N \sum_{l=1}^M C_{ik}^{(2)} R_{jl}^{(2)}(\varphi_z)_{kl} \right) + A_{44}^s \left(\sum_{k=1}^N \sum_{l=1}^M C_{ik}^{(2)} R_{jl}^{(2)}(\varphi_z)_{kl} + \sum_{l=1}^M R_{jl}^{(4)}(\varphi_z)_{il} \right) \right] \\
& - L_{33} \left(\sum_{k=1}^N C_{ik}^{(2)}(\varphi_z)_{kj} + \sum_{l=1}^M R_{jl}^{(2)}(\varphi_z)_{il} \right) - g N_x^T \sum_{k=1}^N C_{ik}^{(2)}(\varphi_z)_{kj} - g N_y^T \sum_{l=1}^M R_{jl}^{(2)}(\varphi_z)_{il} \\
& - g \left(\left(\frac{K_l K_u}{K_l + K_u} \right) (\varphi_z)_{ij} - \left(\frac{K_s K_u}{K_l + K_u} \right) \left(\sum_{k=1}^N C_{ik}^{(2)}(\varphi_z)_{kj} + \sum_{l=1}^M R_{jl}^{(2)}(\varphi_z)_{il} \right) \right) - K_0 \frac{\partial^2 (\varphi_z)_{ij}}{\partial t^2}
\end{aligned}$$