

$$\begin{aligned}
L = & \frac{1}{2}(\lambda + 2\mu)I^2 + \frac{\mu}{2} \left(\frac{\text{Cosh}(\eta_r x) - \text{Cos}(\theta_r y)}{a} \right)^2 \left[\left(\frac{1}{\theta_r} \sum_{i,j,k} A_{ijk} \frac{\partial \phi_{ijk}}{\partial y} \right)^2 + \left(\frac{1}{\eta_r} \sum_{m,n,l} B_{mnl} \frac{\partial \phi_{mnl}}{\partial x} \right)^2 + \right. \\
& \frac{2}{\theta_r \eta_r} \left(\frac{1}{\theta_r} \sum_{i,j,k} A_{ijk} \frac{\partial \phi_{ijk}}{\partial y} \right) \left(\frac{1}{\eta_r} \sum_{m,n,l} B_{mnl} \frac{\partial \phi_{mnl}}{\partial x} \right) + \left(\frac{1}{\theta_r} \sum_{p,q,r} C_{pqr} \frac{\partial \phi_{pqr}}{\partial y} \right)^2 + \left(\frac{1}{\eta_r} \sum_{p,q,r} C_{pqr} \frac{\partial \phi_{pqr}}{\partial x} \right)^2 \\
& \left. + \frac{1}{\text{Sinh}^2(\eta_r x)} \left(\frac{1}{\varphi_r} \sum_{m,n,l} B_{mnl} \frac{\partial \phi_{mnl}}{\partial z} \right)^2 + \frac{2}{\theta_r \varphi_r \text{Sinh}(\eta_r x)} \left(\sum_{p,q,r} C_{pqr} \frac{\partial \phi_{pqr}}{\partial y} \right) \left(\sum_{m,n,l} B_{mnl} \frac{\partial \phi_{mnl}}{\partial z} \right) + \dots \right]
\end{aligned}$$

$$\frac{\partial L}{\partial \hat{A}_{ijk}} = \sum_{i,j,k} A_{ijk} a_{ijk} + \sum_{p,q,r} C_{pqr} c_{pqr} + \sum_{m,n,l} B_{mnl} b_{mnl} - \beta \sum_{i,j,k} A_{ijk} f_{ijk} = 0$$