

$$\frac{\partial \mathcal{L}}{\partial \theta} = \frac{1}{4} \left(\begin{aligned} & -4k\lambda(\beta + \theta\lambda - \phi_{40}) - 2mga \cos \alpha \cos \theta + 2mgl \cos \alpha \sin \theta \left(\sqrt{1 - \left(\frac{x}{l} + \sin \varphi_{10} \right)^2} + \sqrt{1 - \left(\frac{x}{l} + \sin \varphi_{20} \right)^2} \right) \\ & + \frac{4kx \left(-\beta + \arccos \left[\sqrt{1 - \left(\frac{x}{l} + \sin \varphi_{10} \right)^2} + \frac{x \tan \theta}{l} \right] \right) \sec^2 \theta}{l \sqrt{1 - \left(\sqrt{1 - \left(\frac{x}{l} + \sin \varphi_{10} \right)^2} + \frac{x \tan \theta}{l} \right)^2}} \end{aligned} \right)$$