$$\text{sigma}[x\_] = ((2 * (\text{muz} + gx) * \text{nu})/(K * (\text{nu} + \text{muz} + gx)))\text{^}0.5$$

$$g[x\_] = \; -(Tx/(2 * (\text{nu} + \text{muz} + gx)))+$$

$$T$$

$$(((2 * \text{nu}/(K))\text{^}0.5) * ((\text{muz} + gx)\text{^}0.5/(\text{muz} + \text{nu} + gx)\text{^}0.5)*$$

$$((\sinh[x/\text{sigma}[x]])/(\cosh[L/\text{sigma}[x]])))/(2 * (\text{muz} + \text{nu} + gx))$$

$$g'[x\_]$$

$$g"[x\_]$$

$$1.41421 \left(\frac{\text{nu}(\text{muz}+gx)}{K(\text{muz}+\text{nu}+gx)}\right)^{0.5}$$

$$-\frac{Tx}{2(\text{muz}+\text{nu}+gx)} + \frac{0.707107\left(\frac{\text{nu}}{K}\right)^{0.5} T(\text{muz}+gx)^{0.5} \sinh\left[\frac{0.707107x}{\left(\frac{\text{nu}(\text{muz}+gx)}{K(\text{muz}+\text{nu}+gx)}\right)^{0.5}}\right]}{(\text{muz}+\text{nu}+gx)^{1.5} \cosh\left[\frac{0.707107L}{\left(\frac{\text{nu}(\text{muz}+gx)}{K(\text{muz}+\text{nu}+gx)}\right)^{0.5}}\right]}$$

$$\frac{g T \text{x\_}}{2(\text{muz}+\text{nu}+g\text{x\_})^2} - \frac{T}{2(\text{muz}+\text{nu}+g\text{x\_})} - \frac{1.06066 g\left(\frac{\text{nu}}{K}\right)^{0.5} T(\text{muz}+g\text{x\_})^{0.5} \sinh\left[\frac{0.707107\text{x\_}}{\left(\frac{\text{nu}(\text{muz}+g\text{x\_})}{K(\text{muz}+\text{nu}+g\text{x\_})}\right)^{0.5}}\right]}{\cosh\left[\frac{0.707107L}{\left(\frac{\text{nu}(\text{muz}+g\text{x\_})}{K(\text{muz}+\text{nu}+g\text{x\_})}\right)^{0.5}}\right](\text{muz}+\text{nu}+g\text{x\_})^{2.5}} +$$

$$\frac{0.353553 g\left(\frac{\text{nu}}{K}\right)^{0.5} T \sinh\left[\frac{0.707107\text{x\_}}{\left(\frac{\text{nu}(\text{muz}+g\text{x\_})}{K(\text{muz}+\text{nu}+g\text{x\_})}\right)^{0.5}}\right]}{\cosh\left[\frac{0.707107L}{\left(\frac{\text{nu}(\text{muz}+g\text{x\_})}{K(\text{muz}+\text{nu}+g\text{x\_})}\right)^{0.5}}\right](\text{muz}+g\text{x\_})^{0.5}(\text{muz}+\text{nu}+g\text{x\_})^{1.5}} + \left(0.25L\left(\frac{\text{nu}}{K}\right)^{0.5} T(\text{muz}+g\text{x\_})^{0.5}\left(-\frac{g\text{nu}(\text{muz}+g\text{x\_})}{K(\text{muz}+\text{nu}+g\text{x\_})^2} + \frac{g\text{n}}{K(\text{muz}+\right.\right.$$

$$\left(0.707107\left(\frac{\text{nu}}{K}\right)^{0.5} T(\text{muz}+g\text{x\_})^{0.5}\left(\frac{0.707107}{\left(\frac{\text{nu}(\text{muz}+g\text{x\_})}{K(\text{muz}+\text{nu}+g\text{x\_})}\right)^{0.5}} - \frac{0.353553\text{x\_}\left(-\frac{g\text{nu}(\text{muz}+g\text{x\_})}{K(\text{muz}+\text{nu}+g\text{x\_})^2} + \frac{g\text{nu}}{K(\text{muz}+\text{nu}+g\text{x\_})}\right)}{\left(\frac{\text{nu}(\text{muz}+g\text{x\_})}{K(\text{muz}+\text{nu}+g\text{x\_})}\right)^{1.5}}\right)\sinh'\left[\frac{0.7}{\left(\frac{\text{nu}(\text{m}}{K(\text{muz}}\right.\right.$$

$$-\frac{g^2 T \text{x\_}}{(\text{muz}+\text{nu}+g\text{x\_})^3} + \frac{gT}{(\text{muz}+\text{nu}+g\text{x\_})^2} + \frac{2.65165 g^2\left(\frac{\text{nu}}{K}\right)^{0.5} T(\text{muz}+g\text{x\_})^{0.5} \sinh\left[\frac{0.707107\text{x\_}}{\left(\frac{\text{nu}(\text{muz}+g\text{x\_})}{K(\text{muz}+\text{nu}+g\text{x\_})}\right)^{0.5}}\right]}{\cosh\left[\frac{0.707107L}{\left(\frac{\text{nu}(\text{muz}+g\text{x\_})}{K(\text{muz}+\text{nu}+g\text{x\_})}\right)^{0.5}}\right](\text{muz}+\text{nu}+g\text{x\_})^{3.5}} -$$

$$\frac{1.06066 g^2\left(\frac{\text{nu}}{K}\right)^{0.5} T \sinh\left[\frac{0.707107\text{x\_}}{\left(\frac{\text{nu}(\text{muz}+g\text{x\_})}{K(\text{muz}+\text{nu}+g\text{x\_})}\right)^{0.5}}\right]}{\cosh\left[\frac{0.707107L}{\left(\frac{\text{nu}(\text{muz}+g\text{x\_})}{K(\text{muz}+\text{nu}+g\text{x\_})}\right)^{0.5}}\right](\text{muz}+g\text{x\_})^{0.5}(\text{muz}+\text{nu}+g\text{x\_})^{2.5}} - \frac{0.176777 g^2\left(\frac{\text{nu}}{K}\right)^{0.5} T \sinh\left[\frac{0.707107\text{x\_}}{\left(\frac{\text{nu}(\text{muz}+g\text{x\_})}{K(\text{muz}+\text{nu}+g\text{x\_})}\right)^{0.5}}\right]}{\cosh\left[\frac{0.707107L}{\left(\frac{\text{nu}(\text{muz}+g\text{x\_})}{K(\text{muz}+\text{nu}+g\text{x\_})}\right)^{0.5}}\right](\text{muz}+g\text{x\_})^{1.5}(\text{muz}+\text{nu}+g\text{x\_})^{1.5}} +$$

$$\left(0.25L\left(\frac{\text{nu}}{K}\right)^{0.5} T(\text{muz}+g\text{x\_})^{0.5}\left(\frac{2g^2\text{nu}(\text{muz}+g\text{x\_})}{K(\text{muz}+\text{nu}+g\text{x\_})^3} - \frac{2g^2\text{nu}}{K(\text{muz}+\text{nu}+g\text{x\_})^2}\right)\sinh\left[\frac{0.707107\text{x\_}}{\left(\frac{\text{nu}(\text{muz}+g\text{x\_})}{K(\text{muz}+\text{nu}+g\text{x\_})}\right)^{0.5}}\right]\cosh'\left[\frac{0.707107}{\left(\frac{\text{nu}(\text{muz}+g\text{x\_})}{K(\text{muz}+\text{nu}+gx}\right.\right.$$

$$\left(0.75gL\left(\frac{\text{nu}}{K}\right)^{0.5} T(\text{muz}+g\text{x\_})^{0.5}\left(-\frac{g\text{nu}(\text{muz}+g\text{x\_})}{K(\text{muz}+\text{nu}+g\text{x\_})^2} + \frac{g\text{nu}}{K(\text{muz}+\text{nu}+g\text{x\_})}\right)\sinh\left[\frac{0.707107\text{x\_}}{\left(\frac{\text{nu}(\text{muz}+g\text{x\_})}{K(\text{muz}+\text{nu}+g\text{x\_})}\right)^{0.5}}\right]\cosh'\left[\frac{0.7071}{\left(\frac{\text{nu}(\text{muz}+g}{K(\text{muz}+\text{nu}}\right.\right.$$

$$\frac{0.25gL\left(\frac{\mathrm{nu}}{K}\right)^{0.5}T\left(-\frac{g\mathrm{nu}(\mathrm{muz}+g\mathrm{x\_})}{K(\mathrm{muz}+\mathrm{nu}+g\mathrm{x\_})^2}+\frac{g\mathrm{nu}}{K(\mathrm{muz}+\mathrm{nu}+g\mathrm{x\_})}\right)\sinh\left[\frac{0.707107\mathrm{x\_}}{\left(\frac{\mathrm{nu}(\mathrm{muz}+g\mathrm{x\_})}{K(\mathrm{muz}+\mathrm{nu}+g\mathrm{x\_})}\right)^{0.5}}\right]\cosh'\left[\frac{0.707107L}{\left(\frac{\mathrm{nu}(\mathrm{muz}+g\mathrm{x\_})}{K(\mathrm{muz}+\mathrm{nu}+g\mathrm{x\_})}\right)^{0.5}}\right]}{\cosh\left[\frac{0.707107L}{\left(\frac{\mathrm{nu}(\mathrm{muz}+g\mathrm{x\_})}{K(\mathrm{muz}+\mathrm{nu}+g\mathrm{x\_})}\right)^{0.5}}\right]^2(\mathrm{muz}+g\mathrm{x\_})^{0.5}\left(\frac{\mathrm{nu}(\mathrm{muz}+g\mathrm{x\_})}{K(\mathrm{muz}+\mathrm{nu}+g\mathrm{x\_})}\right)^{1.5}(\mathrm{muz}+\mathrm{nu}+g\mathrm{x\_})^{1.5}}-$$

$$\left(0.375L\left(\frac{\mathrm{nu}}{K}\right)^{0.5}T(\mathrm{muz}+g\mathrm{x\_})^{0.5}\left(-\frac{g\mathrm{nu}(\mathrm{muz}+g\mathrm{x\_})}{K(\mathrm{muz}+\mathrm{nu}+g\mathrm{x\_})^2}+\frac{g\mathrm{nu}}{K(\mathrm{muz}+\mathrm{nu}+g\mathrm{x\_})}\right)^2\sinh\left[\frac{0.707107\mathrm{x\_}}{\left(\frac{\mathrm{nu}(\mathrm{muz}+g\mathrm{x\_})}{K(\mathrm{muz}+\mathrm{nu}+g\mathrm{x\_})}\right)^{0.5}}\right]\cosh'\left[\frac{0.707\right.\right.$$

$$\left(0.176777L^2\left(\frac{\mathrm{nu}}{K}\right)^{0.5}T(\mathrm{muz}+g\mathrm{x\_})^{0.5}\left(-\frac{g\mathrm{nu}(\mathrm{muz}+g\mathrm{x\_})}{K(\mathrm{muz}+\mathrm{nu}+g\mathrm{x\_})^2}+\frac{g\mathrm{nu}}{K(\mathrm{muz}+\mathrm{nu}+g\mathrm{x\_})}\right)^2\sinh\left[\frac{0.707107\mathrm{x\_}}{\left(\frac{\mathrm{nu}(\mathrm{muz}+g\mathrm{x\_})}{K(\mathrm{muz}+\mathrm{nu}+g\mathrm{x\_})}\right)^{0.5}}\right]\cosh'\left[\frac{\right.\right.$$

$$\left(2.12132g\left(\frac{\mathrm{nu}}{K}\right)^{0.5}T(\mathrm{muz}+g\mathrm{x\_})^{0.5}\left(\frac{0.707107}{\left(\frac{\mathrm{nu}(\mathrm{muz}+g\mathrm{x\_})}{K(\mathrm{muz}+\mathrm{nu}+g\mathrm{x\_})}\right)^{0.5}}-\frac{0.353553\mathrm{x\_}\left(-\frac{g\mathrm{nu}(\mathrm{muz}+g\mathrm{x\_})}{K(\mathrm{muz}+\mathrm{nu}+g\mathrm{x\_})^2}+\frac{g\mathrm{nu}}{K(\mathrm{muz}+\mathrm{nu}+g\mathrm{x\_})}\right)}{\left(\frac{\mathrm{nu}(\mathrm{muz}+g\mathrm{x\_})}{K(\mathrm{muz}+\mathrm{nu}+g\mathrm{x\_})}\right)^{1.5}}\right)\sinh'\left[\frac{0.7\right.\right.$$

$$\left(0.707107g\left(\frac{\mathrm{nu}}{K}\right)^{0.5}T\left(\frac{0.707107}{\left(\frac{\mathrm{nu}(\mathrm{muz}+g\mathrm{x\_})}{K(\mathrm{muz}+\mathrm{nu}+g\mathrm{x\_})}\right)^{0.5}}-\frac{0.353553\mathrm{x\_}\left(-\frac{g\mathrm{nu}(\mathrm{muz}+g\mathrm{x\_})}{K(\mathrm{muz}+\mathrm{nu}+g\mathrm{x\_})^2}+\frac{g\mathrm{nu}}{K(\mathrm{muz}+\mathrm{nu}+g\mathrm{x\_})}\right)}{\left(\frac{\mathrm{nu}(\mathrm{muz}+g\mathrm{x\_})}{K(\mathrm{muz}+\mathrm{nu}+g\mathrm{x\_})}\right)^{1.5}}\right)\sinh'\left[\frac{0.707107\mathrm{x\_}}{\left(\frac{\mathrm{nu}(\mathrm{muz}+g\mathrm{x\_})}{K(\mathrm{muz}+\mathrm{nu}+g\mathrm{x\_})}\right)^{0.5}}\right]\right)$$

$$\left(0.707107\left(\frac{\mathrm{nu}}{K}\right)^{0.5}T(\mathrm{muz}+g\mathrm{x\_})^{0.5}\left(-\frac{0.353553\mathrm{x\_}\left(\frac{2g^2\mathrm{nu}(\mathrm{muz}+g\mathrm{x\_})}{K(\mathrm{muz}+\mathrm{nu}+g\mathrm{x\_})^3}-\frac{2g^2\mathrm{nu}}{K(\mathrm{muz}+\mathrm{nu}+g\mathrm{x\_})^2}\right)}{\left(\frac{\mathrm{nu}(\mathrm{muz}+g\mathrm{x\_})}{K(\mathrm{muz}+\mathrm{nu}+g\mathrm{x\_})}\right)^{1.5}}-\frac{0.707107\left(-\frac{g\mathrm{nu}(\mathrm{muz}+g\mathrm{x\_})}{K(\mathrm{muz}+\mathrm{nu}+g\mathrm{x\_})^2}+\frac{K(\mathrm{muz}\right.\right.\right.$$

$$\left(0.5L\left(\frac{\mathrm{nu}}{K}\right)^{0.5}T(\mathrm{muz}+g\mathrm{x\_})^{0.5}\left(-\frac{g\mathrm{nu}(\mathrm{muz}+g\mathrm{x\_})}{K(\mathrm{muz}+\mathrm{nu}+g\mathrm{x\_})^2}+\frac{g\mathrm{nu}}{K(\mathrm{muz}+\mathrm{nu}+g\mathrm{x\_})}\right)\left(\frac{0.707107}{\left(\frac{\mathrm{nu}(\mathrm{muz}+g\mathrm{x\_})}{K(\mathrm{muz}+\mathrm{nu}+g\mathrm{x\_})}\right)^{0.5}}-\frac{0.353553\mathrm{x\_}\left(-\frac{g\mathrm{nu}(\mathrm{muz}+g\right.\right.\right.$$

$$\left(0.0883883L^2\left(\frac{\mathrm{nu}}{K}\right)^{0.5}T(\mathrm{muz}+g\mathrm{x\_})^{0.5}\left(-\frac{g\mathrm{nu}(\mathrm{muz}+g\mathrm{x\_})}{K(\mathrm{muz}+\mathrm{nu}+g\mathrm{x\_})^2}+\frac{g\mathrm{nu}}{K(\mathrm{muz}+\mathrm{nu}+g\mathrm{x\_})}\right)^2\sinh\left[\frac{0.707107\mathrm{x\_}}{\left(\frac{\mathrm{nu}(\mathrm{muz}+g\mathrm{x\_})}{K(\mathrm{muz}+\mathrm{nu}+g\mathrm{x\_})}\right)^{0.5}}\right]\cosh''\left[\frac{\right.\right.$$

$$\left(0.707107\left(\frac{\mathrm{nu}}{K}\right)^{0.5}T(\mathrm{muz}+g\mathrm{x\_})^{0.5}\left(\frac{0.707107}{\left(\frac{\mathrm{nu}(\mathrm{muz}+g\mathrm{x\_})}{K(\mathrm{muz}+\mathrm{nu}+g\mathrm{x\_})}\right)^{0.5}}-\frac{0.353553\mathrm{x\_}\left(-\frac{g\mathrm{nu}(\mathrm{muz}+g\mathrm{x\_})}{K(\mathrm{muz}+\mathrm{nu}+g\mathrm{x\_})^2}+\frac{g\mathrm{nu}}{K(\mathrm{muz}+\mathrm{nu}+g\mathrm{x\_})}\right)}{\left(\frac{\mathrm{nu}(\mathrm{muz}+g\mathrm{x\_})}{K(\mathrm{muz}+\mathrm{nu}+g\mathrm{x\_})}\right)^{1.5}}\right)^2\sinh''\left[\frac{\right.\right.$$