Achromatic colour vision with relative luminance
Mathematical equations with potential functions

$$F_{ab}(L_r,m)=b\tanh(x_r/a)=b\frac{L_r^m-L_r^{-m}}{L_r^m+L_r^{-m}} \qquad x_r=\log(L_r),\ L_r=L/L_u,\ x_r<=0 \quad [1]$$

$$\frac{dF_{ab}(L_r,m)}{dL_r}=\frac{4bm}{L_r[L_r^m+L_r^{-m}]^2} \qquad x_r=\ln L_r/\ln(10),\ dx_r/dL_r=1/(\ln(10)L_r),\ m=1/(\ln(10)a) \quad [5]$$

$$\frac{L}{dL}=\frac{4bmL_uL}{L_r[L_r^m+L_r^{-m}]^2} \qquad dL=\frac{L_r[L_r^m+L_r^{-m}]^2}{4bmL_u} \quad [7]$$

$$\frac{L/dL}{(L/dL)_u}=\frac{4L}{L_r[L_r^m+L_r^{-m}]^2L_u};\quad \frac{dL}{dL_u}=\frac{L_r[L_r^m+L_r^{-m}]^2}{4} \quad [8]$$

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