

Line-element equations according to CIE 230:2019

Colour-threshold (t) function $f_t(x) = \Delta Y_t = \Delta x Y_u$ [0]

$\Delta Y_t = (A_1 + A_2 Y) / A_0$ $A_0 = 1,5$, $A_1 = 0,0170$, $A_2 = 0,0058$

$$f_{tu}(x) = \frac{\Delta Y_t}{\Delta Y_{tu}} = \frac{1 + b x}{1 + b} \quad b = A_2 Y_u / A_1 \quad x = Y / Y_u \quad [1]$$

$$F_{tu}(x) = \int \frac{f'_{tu}(x)}{f_{tu}(x)} dx = \int \frac{b}{1 + b x} dx \quad [2]$$

Example for $L^*_{tu}(x)$, ΔY_t with $x = Y / Y_u$, $x_u = 1$, $b = 6,141$:

$$L^*_{tu}(x) = \frac{L^*_t(x)}{L^*_{tu}(x)} = \frac{\ln(1 + b x)}{\ln(1 + b)} \quad [3]$$

$$f_{tu}(x) = \frac{\Delta Y_t}{\Delta Y_{tu}} = \frac{1 + b x}{1 + b} \quad [4]$$