CIELAB 1976 $L^*a^*b^*$-Farbraum

Definition und Ableitung $(X_u/X_n = Y_u/Y_n = Z_u/Z_n = 0{,}18)$

$$L^* = 116\,(Y/Y_n)^{1/3} - 16 \qquad [Y/Y_n]^{1/3} > 24/116$$

$$a^* = 500\,[\,(X/X_n)^{1/3} - (Y/Y_n)^{1/3}\,] \qquad Y > 0{,}885$$

$$b^* = 200\,[\,(Y/Y_n)^{1/3} - (Z/Z_n)^{1/3}\,]$$

$$dL^*/dY = 116\,[(Y/Y_n)^{-2/3}/(3Y_n)] \qquad Y_n = 100$$

$$da^*/dY = 500\,[(X/X_n)^{-2/3}/(3X_n) - (Y/Y_n)^{-2/3}/(3Y_n)]$$

$$db^*/dY = 200\,[(Y/Y_n)^{-2/3}/(3X_n) - (Z/Z_n)^{-2/3}/(3Z_n)]$$

$c_u = [Y_u/Y_n]^{1/3} = 0{,}18^{1/3} = 0{,}5647$, ähnlich für X, Z

$u_L = 116c_u = 65{,}51, u_a = 500c_u = 282{,}35, u_b = 200c_u = 112{,}94$

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