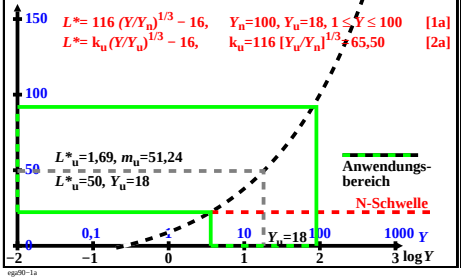
L^*_{CIELAB} Helligkeit L^*_{CIELAB}

$L^* = 116\,(Y/Y_n)^{1/3} - 16, \quad Y_n=100,\ Y_u=18,\ 1 \le Y \le 100$ [1a]

$L^* = k_u\,(Y/Y_u)^{1/3} - 16, \quad k_u = 116\,[Y_u/Y_n]^{1/3} - 65{,}50$ [2a]



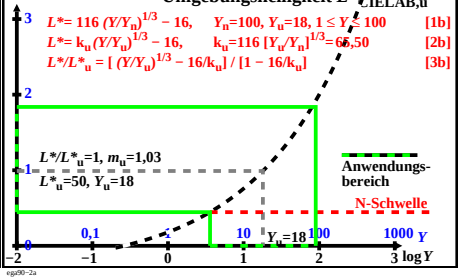
ega90−1a

$L^*_{CIELAB,r}$ relative Helligkeit normiert zur Umgebungshelligkeit $L^*_{CIELAB,u}$

$L^* = 116\,(Y/Y_n)^{1/3} - 16, \quad Y_n=100,\ Y_u=18,\ 1 \le Y \le 100$ [1b]

$L^* = k_u\,(Y/Y_u)^{1/3} - 16, \quad k_u = 116\,[Y_u/Y_n]^{1/3} - 65{,}50$ [2b]

$L^*/L^*_u = [\,(Y/Y_u)^{1/3} - 16/k_u\,] / [1 - 16/k_u]$ [3b]



ega90−2a

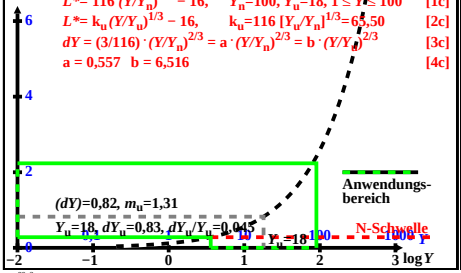
ΔY ΔY_{CIELAB}-Normfarbwertdifferenz

$L^* = 116\,(Y/Y_n)^{1/3} - 16, \quad Y_n=100,\ Y_u=18,\ 1 \le Y \le 100$ [1c]

$L^* = k_u\,(Y/Y_u)^{1/3} - 16, \quad k_u = 116\,[Y_u/Y_n]^{1/3} - 65{,}50$ [2c]

$dY = (3/116)\cdot(Y/Y_n)^{2/3} = a\cdot(Y/Y_n)^{2/3} = b\cdot(Y/Y_u)^{2/3}$ [3c]

$a = 0{,}557 \quad b = 6{,}516$ [4c]



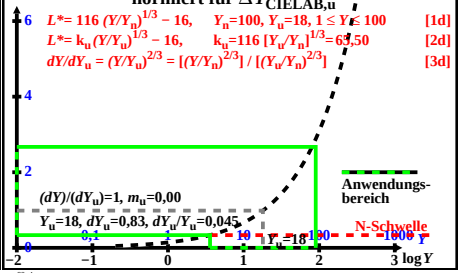
ega90−3a

$\Delta Y/\Delta Y_u$ ΔY_{CIELAB}-Normfarbwertdifferenz normiert für $\Delta Y_{CIELAB,u}$

$L^* = 116\,(Y/Y_n)^{1/3} - 16, \quad Y_n=100,\ Y_u=18,\ 1 \le Y \le 100$ [1d]

$L^* = k_u\,(Y/Y_u)^{1/3} - 16, \quad k_u = 116\,[Y_u/Y_n]^{1/3} - 65{,}50$ [2d]

$dY/dY_u = (Y/Y_u)^{2/3} = [(Y/Y_n)^{2/3}] / [(Y_u/Y_n)^{2/3}]$ [3d]



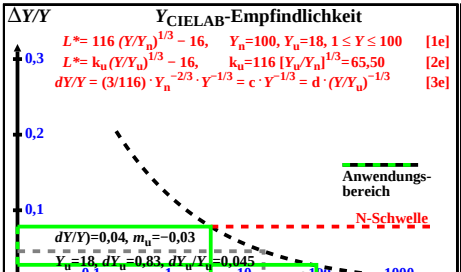
ega90−4a

$\Delta Y/Y$ Y_{CIELAB}-Empfindlichkeit

$L^* = 116\,(Y/Y_n)^{1/3} - 16, \quad Y_n=100,\ Y_u=18,\ 1 \le Y \le 100$ [1e]

$L^* = k_u\,(Y/Y_u)^{1/3} - 16, \quad k_u = 116\,[Y_u/Y_n]^{1/3} - 65{,}50$ [2e]

$dY/Y = (3/116)\cdot Y_n^{-2/3}\cdot Y^{-1/3} = c\cdot Y^{-1/3} = d\cdot(Y/Y_u)^{-1/3}$ [3e]



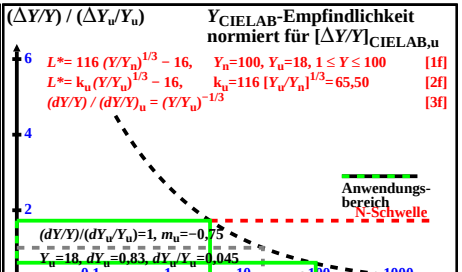
ega90−5a

$(\Delta Y/Y)\,/\,(\Delta Y_u/Y_u)$ Y_{CIELAB}-Empfindlichkeit normiert für $[\Delta Y/Y]_{CIELAB,u}$

$L^* = 116\,(Y/Y_n)^{1/3} - 16, \quad Y_n=100,\ Y_u=18,\ 1 \le Y \le 100$ [1f]

$L^* = k_u\,(Y/Y_u)^{1/3} - 16, \quad k_u = 116\,[Y_u/Y_n]^{1/3} - 65{,}50$ [2f]

$(dY/Y)\,/\,(dY/Y)_u = (Y/Y_u)^{-1/3}$ [3f]



ega90−6a

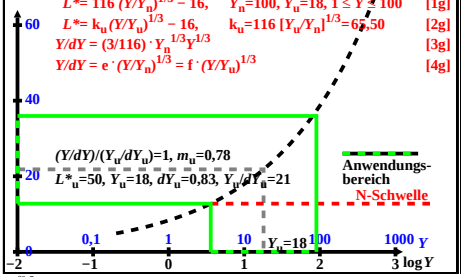
$Y/\Delta Y$ Y_{CIELAB}-Kontrast

$L^* = 116\,(Y/Y_n)^{1/3} - 16, \quad Y_n=100,\ Y_u=18,\ 1 \le Y \le 100$ [1g]

$L^* = k_u\,(Y/Y_u)^{1/3} - 16, \quad k_u = 116\,[Y_u/Y_n]^{1/3} - 65{,}50$ [2g]

$Y/dY = (3/116)\cdot Y_n^{1/3} Y^{1/3}$ [3g]

$Y/dY = e\cdot(Y/Y_n)^{1/3} = f\cdot(Y/Y_u)^{1/3}$ [4g]



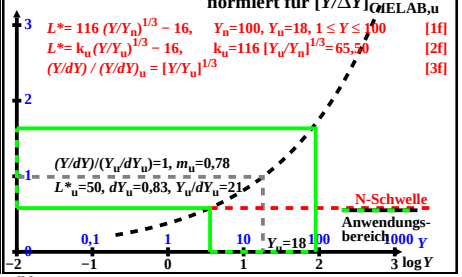
ega90−7a

$(Y/\Delta Y)\,/\,(Y_u/\Delta Y_u)$ Y_{CIELAB}-Kontrast normiert für $[Y/\Delta Y]_{CIELAB,u}$

$L^* = 116\,(Y/Y_n)^{1/3} - 16, \quad Y_n=100,\ Y_u=18,\ 1 \le Y \le 100$ [1f]

$L^* = k_u\,(Y/Y_u)^{1/3} - 16, \quad k_u = 116\,[Y_u/Y_n]^{1/3} - 65{,}50$ [2f]

$(Y/dY)\,/\,(Y/dY)_u = [Y/Y_u]^{1/3}$ [3f]



ega90−8a