Top-left panel:
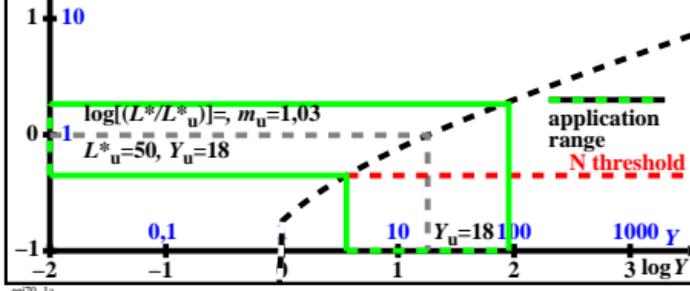
$\log[L^*_{r,CIELAB}]$ **relative lightness normalized to the background lightness** $L^*_{u,CIELAB}$

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

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

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

$\log[(L^*/L^*_u)] = -$, $m_u = 1,03$
$L^*_u = 50$, $Y_u = 18$

application range

W threshold
N threshold

$Y_u = 18$

eej70–1a

Top-right panel:

$\log[\Delta Y / \Delta Y_u]$ **ΔY_{CIELAB} tristimulus-value difference normalized to** $\Delta Y_{u,CIELAB}$

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

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

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

$Y_u = 18$, $dY_u = 0,83$, $dY_u/Y_u = 0,045$
$\log[(dY)_u/(dY)_u] = 0$, $m_u = 0,66$

W threshold
application range
N threshold

$Y_u = 18$

eej70–2a

Bottom-left panel:
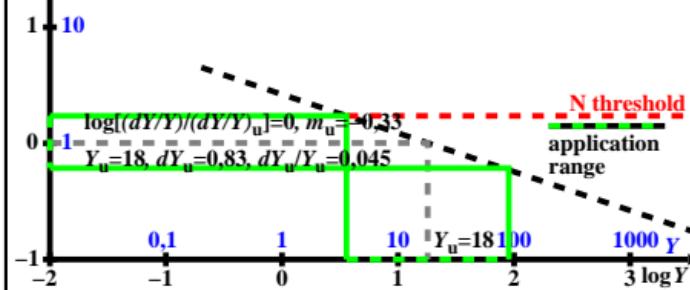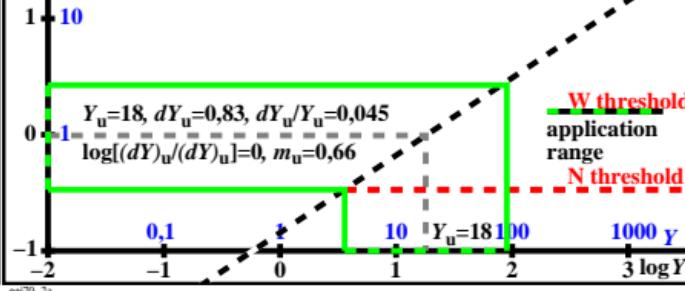
$\log[(\Delta Y/Y) / (\Delta Y/Y)_u]$ **Y_{CIELAB} sensitivity normalized to** $[\Delta Y/Y]_{u,CIELAB}$

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

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

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

N threshold
$\log[(dY/Y)/(dY/Y)]_u = 0$, $m_u = 0,33$
application range
$Y_u = 18$, $dY_u = 0,83$, $dY_u/Y_u = 0,045$
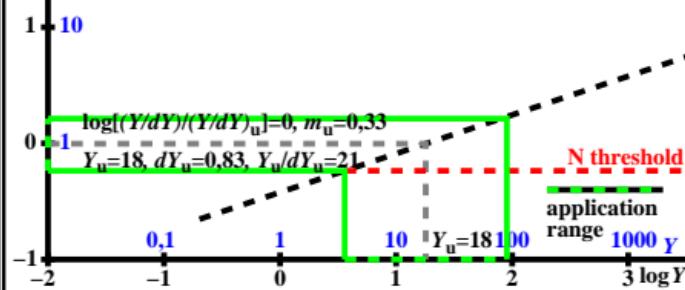
$Y_u = 18$

eej70–3a

Bottom-right panel:

$\log[(Y/\Delta Y) / (Y/\Delta Y)_u]$ **Y_{CIELAB} contrast normalized to** $[Y/\Delta Y]_{u,CIELAB}$

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

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

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

$\log[(Y/dY)/(Y/dY)_u] = 0$, $m_u = 0,33$
$Y_u = 18$, $dY_u = 0,83$, $Y_u/dY_u = 21$

N threshold
application range

$Y_u = 18$

eej70–4a

eej70–3n