

### log (L\*) LABJND threshold lightness

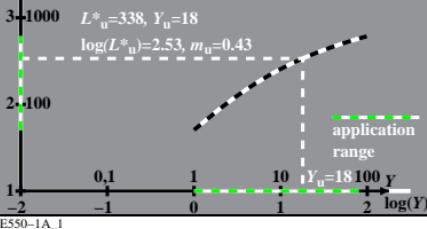
$$\log(L^*) = L^*$$

$$L^* = (A_0/A_2) \ln (A_1 + A_2 \cdot Y)$$

$$A_0=1.0 \quad A_1=0.017 \quad A_2=0.0058$$

$$L^*_u=338, Y_u=18$$

$$\log(L^*_u)=2.53, m_u=0.43$$



### log ΔY CIE tristimulus value Y difference

$$\log(\Delta Y) \Delta Y = (A_0/A_2) \ln (A_1 + A_2 \cdot Y)$$

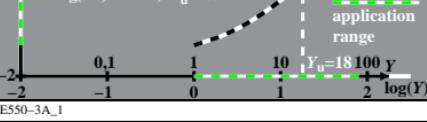
$$A_0=1.0 \quad A_1=0.017 \quad A_2=0.0058$$

tristimulus value Y difference

$$\log(dY) = \log [(A_1 + A_2 \cdot Y) / A_0]$$

$$Y_u=18, dY_u=-0.12, dY_u/Y_u=0.006$$

$$\log(dY)=-0.91, m_u=-0.86$$



### log (ΔY/Y) CIE tristimulus value Y contrast

$$\log(C_r) = \log(Y/Y)$$

$$L^* = (A_0/A_2) \ln (A_1 + A_2 \cdot Y)$$

$$A_0=1.0 \quad A_1=0.017 \quad A_2=0.0058$$

relative tristimulus value Y contrast

$$\log(dY/Y) = \log [(A_1 + A_2 \cdot Y) / (A_0 \cdot Y)]$$

$$Y_u=18, dY_u=-0.12, dY_u/Y_u=0.006$$

$$\log(dY/Y)=-2.17, m_u=-0.13$$



### log (Y/ΔY) CIE tristimulus value Y sensitivity

$$\log(S_r) = \log(Y/Y)$$

$$L^* = (A_0/A_2) \ln (A_1 + A_2 \cdot Y)$$

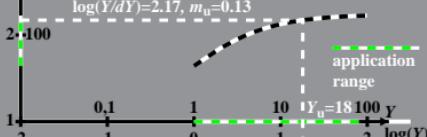
$$A_0=1.0 \quad A_1=0.017 \quad A_2=0.0058$$

relative tristimulus value Y sensitivity

$$\log(Y/dY) = \log [(A_1 + A_2 \cdot Y) / (A_0 \cdot Y)]$$

$$L^*_u=338, Y_u=18, dY_u=0.12, Y_u/dY_u=148$$

$$\log(Y/dY)=2.17, m_u=0.13$$



### log (L\*/L\*\_u) relative LABJND threshold lightness

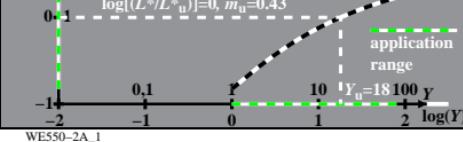
$$\log(L^*/L^*_u) = L^*/L^*_u$$

$$L^*/L^*_u = \ln (A_1 + A_2 \cdot Y) - \ln (A_1 + A_2 \cdot Y_u)$$

$$A_0=1.0 \quad A_1=0.017 \quad A_2=0.0058$$

$$L^*_u=338, Y_u=18$$

$$\log(L^*/L^*_u)=0, m_u=0.43$$



### log(ΔY/ΔY\_u) relative CIE tristimulus value Y difference

$$\log(\Delta Y/\Delta Y_u) = \Delta Y/\Delta Y_u$$

$$L^* = (A_0/A_2) \ln (A_1 + A_2 \cdot Y)$$

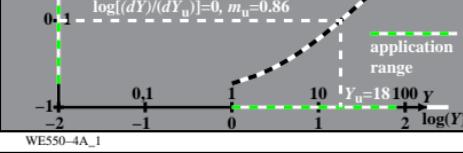
$$A_0=1.0 \quad A_1=0.017 \quad A_2=0.0058$$

relative tristimulus value Y difference

$$\log(dY/dY_u) = \log [(A_1 + A_2 \cdot Y) / (A_1 + A_2 \cdot Y_u)]$$

$$Y_u=18, dY_u=0.12, dY_u/Y_u=0.006$$

$$\log(dY/dY_u)=0, m_u=0.86$$



### log [(ΔY/Y) / (ΔY\_u/Y\_u)] relative CIE tristimulus value Y contrast

$$C_r/C_{ru} = (\Delta Y/Y) / (\Delta Y_u/Y_u)$$

$$L^* = (A_0/A_2) \ln (A_1 + A_2 \cdot Y)$$

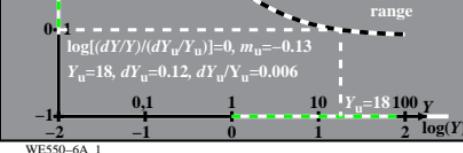
$$A_0=1.0 \quad A_1=0.017 \quad A_2=0.0058$$

tristimulus value Y contrast

$$\log[(dY/Y)/(dY_u/Y_u)] = \log [(A_1 + A_2 \cdot Y) / Y] - \log [(A_1 + A_2 \cdot Y_u) / Y_u]$$

$$\log[(dY/Y)/(dY_u/Y_u)]=0, m_u=-0.13$$

$$Y_u=18, dY_u=0.12, dY_u/Y_u=0.006$$



### log [(Y/ΔY) / (Y\_u/ΔY\_u)] relative CIE tristimulus value Y sensitivity

$$S_r/S_{ru} = (Y/Y) / (Y_u/Y_u)$$

$$L^* = (A_0/A_2) \ln (A_1 + A_2 \cdot Y)$$

$$A_0=1.0 \quad A_1=0.017 \quad A_2=0.0058$$

relative tristimulus value Y sensitivity

$$\log[(Y/dY)/(Y_u/dY_u)] = \log [Y / (A_1 + A_2 \cdot Y)] - \log [Y_u / (A_1 + A_2 \cdot Y_u)]$$

$$L^*_u=338, Y_u=18, dY_u=0.12, Y_u/dY_u=148$$

$$\log[(Y/dY)/(Y_u/dY_u)]=0, m_u=0.13$$

