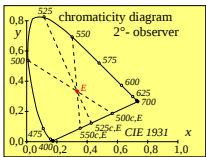
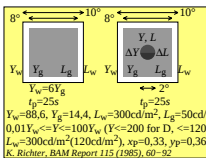


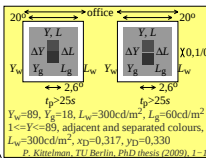
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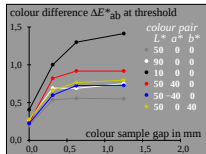
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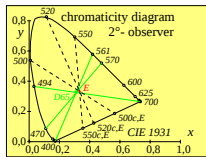
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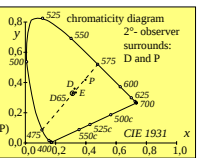
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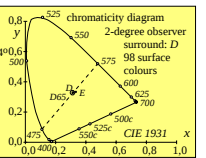
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AEQ2L0N1



AEQ2L0N1



AEQ2L0N1

Colour-difference formula LABJND 1985 (JND=just noticeable difference)

$$\Delta E_{JND}^* = \Delta E_{85}^* = A_0 \left[(\Delta Y)^2 + (A_3 \Delta a^*)^2 + (A_4 \Delta b^*)^2 \right]^{1/2} / (A_1 + A_2 \cdot Y)$$

$$a^* = x/y \quad a_n = x_n/y_n \quad b^* = -0.4 z/Y \quad b_n = -0.4 z_n/y_n$$

$$a'' = a_n + (a - a_n) / (1 + 0.5 |a - a_n|) \quad n = D65 \text{ or } A \text{ (background)}$$

$$b'' = b_n + (b - b_n) / (1 + 0.5 |b - b_n|)$$

$$Y = (Y_1 + Y_2) / 2 \quad \Delta Y = Y_1 - Y_2 \quad \Delta a'' = a_1'' - a_2'' \quad \Delta b'' = b_1'' - b_2''$$

$$A_1 = 0,0170 \quad A_2 = 0,0058$$

$$A_3 = 1,0 \quad A_4 = 1,8 \quad A_0 = 1,5 \quad \text{background D65}$$

$$A_3 = 1,0 \quad A_4 = 1,7 \quad A_0 = 1,0 \quad \text{background A}$$

Just noticeable difference (JND) in four colour directions

$$\Delta Y = \text{const} (A_1 + A_2 \cdot Y) / A_0 \quad \text{in luminance direction WN}$$

$$\Delta a^* \cdot Y = \text{const} (A_1 + A_2 \cdot Y) / (A_0 \cdot A_3) \quad \text{in chromaticity direction RG}$$

$$\Delta b^* \cdot Y = \text{const} (A_1 + A_2 \cdot Y) / (A_0 \cdot A_4) \quad \text{in chromaticity direction YB}$$

$$\Delta C_{ab} \cdot Y = \text{const} (A_1 + A_2 \cdot Y) / (A_0 \cdot [A_3^2 + A_4^2]^{1/2}) \quad \text{in any chromaticity direction } C_{ab}$$

Colour-difference formula LABJND 1985 only for achromatic colours

$$\Delta E_{JND}^* = \Delta E_{85}^* = A_0 \left[(\Delta Y)^2 + (A_3 \Delta a^*)^2 + (A_4 \Delta b^*)^2 \right]^{1/2} / (A_1 + A_2 \cdot Y)$$

$$a^* = x/y \quad b^* = -0.4 z/y$$

$$Y = (Y_1 + Y_2) / 2 \quad \Delta Y = Y_1 - Y_2 \quad \Delta a^* = a_1^* - a_2^* \quad \Delta b^* = b_1^* - b_2^*$$

$$A_1 = 0,0170 \quad A_2 = 0,0058$$

$$A_3 = 1,0 \quad A_4 = 1,8 \quad A_0 = 1,5 \quad \text{background D65}$$

$$A_3 = 1,0 \quad A_4 = 1,7 \quad A_0 = 1,0 \quad \text{background A}$$

Just noticeable difference (JND) in three colour directions and line elements

$$A_0 \cdot \Delta Y = (A_1 + A_2 \cdot Y) \quad \text{in luminance direction WN}$$

$$A_0 \cdot \Delta a^* \cdot Y = (A_1 + A_2 \cdot Y) \quad \text{in chromaticity direction RG}$$

$$A_0 \cdot \Delta b^* \cdot Y = (A_1 + A_2 \cdot Y) \quad \text{in chromaticity direction YB}$$

$$dE_{85,L}^* = \frac{\delta}{\delta Y} L^*_{85} = \frac{\delta}{\delta Y} [A_0 / (A_2 \cdot \ln(A_1 + A_2 \cdot Y))] = A_0 \cdot dY / (A_1 + A_2 \cdot Y)$$

$$dE_{85,a}^* = \frac{\delta}{\delta a^*} a^*_{85} = \frac{\delta}{\delta a^*} [(A_0 \cdot A_3 \cdot Y \cdot a) / (A_1 + A_2 \cdot Y)] = A_0 \cdot da \cdot A_3 \cdot Y / (A_1 + A_2 \cdot Y)$$

$$dE_{85,b}^* = \frac{\delta}{\delta b^*} b^*_{85} = \frac{\delta}{\delta b^*} [(A_0 \cdot A_4 \cdot Y \cdot b) / (A_1 + A_2 \cdot Y)] = A_0 \cdot db \cdot A_4 \cdot Y / (A_1 + A_2 \cdot Y)$$