see similar files: http://farbe.li.tu-berlin.de/CES1/CES1.HTM
technical information: http://farbe.li.tu-berlin.de or http://color.li.tu-berlin.de

TUB registration: 20220401-CES1/CES1L0NA.TXT /.PS
application for measurement of display output
TUB material: code=rha4ta

color space CIELAB 1976, color values, -attributes, -chromaticities *(a', b')*

tristimulus values *X, Y, Z* –> color attributes *L*, a*, b**

lightness $L^* = 116\,(Y/Y_n)^{1/3} - 16$

RG chromaticness $a^* = 500\,[\,(X/X_n)^{1/3} - (Y/Y_n)^{1/3}\,] = 500\,[\,a' - a'_n\,]\,Y^{1/3}$

JB chromaticness $b^* = 200\,[\,(Y/Y_n)^{1/3} - (Z/Z_n)^{1/3}\,] = 500\,[\,b' - b'_n\,]\,Y^{1/3}$

color attributes *L*, a*, b** –> **tristimulus values *X, Y, Z***

tristimulus values

$X = X_n\,[\,(L^* + 16)/116 + a^*/500\,]^3$

$Y = Y_n\,[\,(L^* + 16)/116\,]^3$

$Z = Z_n\,[\,(L^* + 16)/116 - b^*/200\,]^3$

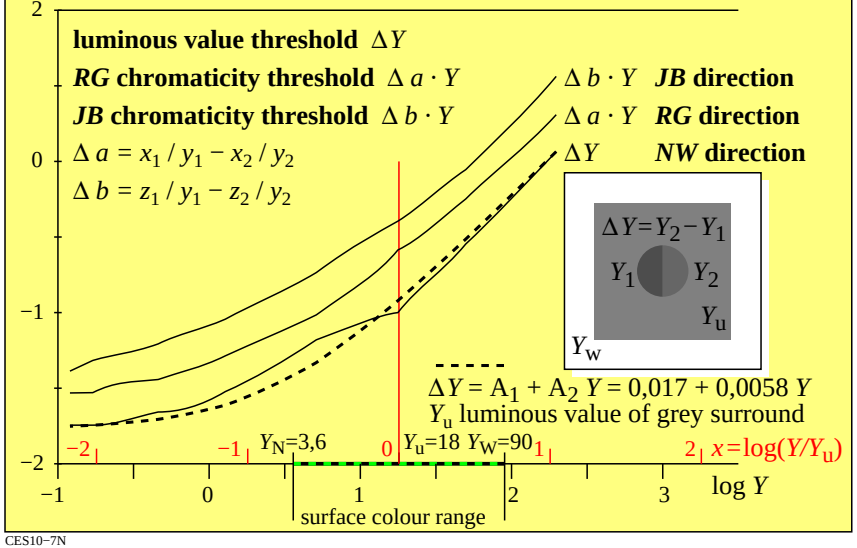
chromaticity for CIELAB 1976, LABHNU 1977, LABHNUx 1979

CIELAB 1976, 2^o	$a' = 0{,}2191\,(x/y)^{1/3}$	$b' = -0{,}08376\,(z/y)^{1/3}$
LABHNU 1977	$a' = (x/y + 1/6)^{1/3}/4$	$b' = -(z/y + 1/6)^{1/3}/12$
LABHNU1 1979	$a' = (x/y + 1)/15$ *linear!*	$b' = -(z/y + 1/6)^{1/3}/12$
LABHNU2 1979	$a' = (x/y + 1/6)^{2/3}/15$	$b' = -(z/y + 1/6)^{1/3}/12$
CIELAB 1976, 10^o	$a' = 0{,}2193\,(x_{10}/y_{10})^{1/3}$	$b' = -0{,}08417\,(z_{10}/y_{10})^{1/3}$
chromaticity constants	$a_2 = 500\,(1/X_n)^{1/3} = 0{,}2191$	$b_2 = -200\,(1/Z_n)^{1/3} = -0{,}08376$
CIELAB, 2^o,10^o	$a_{10} = 500\,(1/X_{n,10})^{1/3} = 0{,}2193$	$b_{10} = -200\,(1/Z_{n,10})^{1/3} = -0{,}08417$

CES10−3N

Thresholds: *NW* achromatic and *RG* & *JB* chromatic as function of *Y*

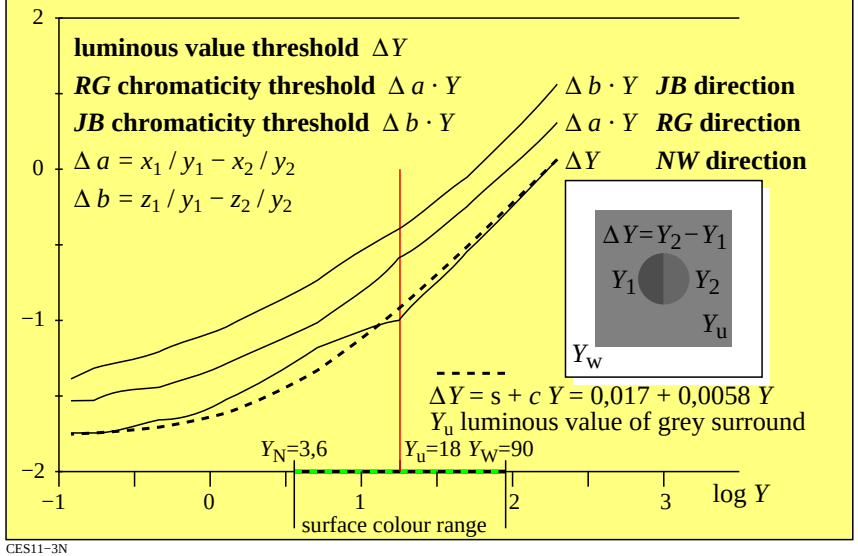
Experiments and data: BAM-research report no. 115 (1985), page 72
Data used for colour-difference formula LABJND, see CIE:2019



CES10−7N

Thresholds: *NW* achromatic and *RG* & *JB* chromatic as function of *Y*

Experiments and data: BAM-research report no. 115 (1985), page 72
Data used for colour-difference formula LABJND, see CIE:2019



CES11−3N

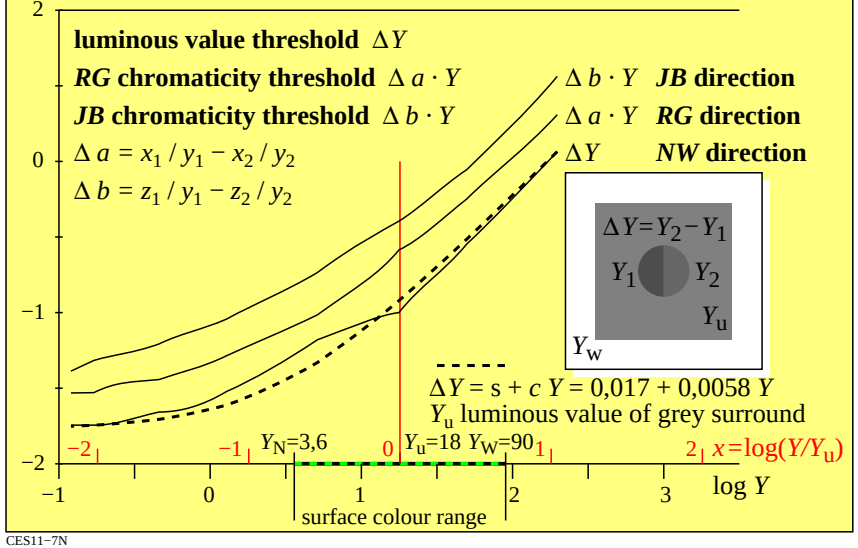
Thresholds: *NW* achromatic and *RG* & *JB* chromatic as function of *Y*

Experiments and data: BAM-research report no. 115 (1985), page 72
Data used for colour-difference formula LABJND, see CIE:2019

CES10−7N

Thresholds: *NW* achromatic and *RG* & *JB* chromatic as function of *Y*

Experiments and data: BAM-research report no. 115 (1985), page 72
Data used for colour-difference formula LABJND, see CIE:2019



CES11−7N