http://farbe.li.tu-berlin.de/DEG0/DEG0L0N1.TXT /.PS; only vector graphic VG; start output
N: no 3D-linearization (OL) in file (F) or PS-startup (S)

see similar files: http://farbe.li.tu-berlin.de/DEG0/DEG0.HTM
technical information: http://farbe.li.tu-berlin.de or http://color.li.tu-berlin.de

$F_{ab}(x_r)$ = tangens hyperbolicus (tanh) & modified

$F_{ab}(x_r) = b\,\frac{e^{x_r/a} - e^{-x_r/a}}{e^{x_r/a} + e^{-x_r/a}}$ e=2,718282 a=1; b=1

$F_{ab}(x_r) = b\,\frac{e^{x_r/a} - e^{-x_r/a}}{e^{x_r/a} + e^{-x_r/a}}$ a=1; b=2

m_r=0,88 m_a=1,07

N W

color diffus luminance

L_u $L_u = 28$ cd/m²

$x_r = \log[L/L_u]$

DEG0L-1N

Achromatic receptor response function
$F_{bu}[x_r/a]$; x_r=log(relative luminance)

with $x_r = \log[L/L_u]$ (L=test luminance)
L_u=surround luminance

$F_{bu}[x_r/a] = b\,\frac{e^{x_r/a} - e^{-x_r/a}}{e^{x_r/a} + e^{-x_r/a}} = b \tanh[x_r/a]$

function values for b=1 and a>0 :

$F_{1u}[(x-u)/a \to -\infty] = -1 \quad x = \log L$
$F_{1u}[(x-u)/a = 0] = 0 \quad u = \log L_u$
$F_{1u}[(x-u)/a \to +\infty] = +1$

DEG0L-2N

Achromatic receptor response function
$F_{bu}[x_r/a]$; x_r=log(relative luminance)

with $x_r = \log[L/L_u]$ (L=test luminance)
L_u=surround luminance

$F_{bu}[x_r/a] = b\,\frac{e^{x_r/a} - e^{-x_r/a}}{e^{x_r/a} + e^{-x_r/a}} = b \tanh[x_r/a]$

function values for b=1 and a>0 :

$F_{1u}[(x-u)/a \to -\infty] = -1 \quad x = \log L$
$F_{1u}[(x-u)/a = 0] = 0 \quad u = \log L_u$
$F_{1u}[(x-u)/a \to +\infty] = +1$

DEG0L-3N

Achromatic receptor response function
$F_{bv}[x_v/a]$; x_v=log(relative v-luminance)

with $x_v = \log[L/L_u]$ (L=test luminance)
$L_v = L_u + \Delta L_u$=effective surround luminance

$F_{bv}[x_v/a] = b\,\frac{e^{x_v/a} - e^{-x_v/a}}{e^{x_v/a} + e^{-x_v/a}} = b \tanh[x_v/a]$

function values for b=1 and a>0 :

$F_{1v}[(x-v)/a \to -\infty] = -1 \quad x = \log L$
$F_{1v}[(x-v)/a = 0] = 0 \quad v = \log(L_u + \Delta L_u)$
$F_{1v}[(x-v)/a \to +\infty] = +1$

DEG0L-4N

Achromatic receptor response function
$Q_{1m}[k(u-u_0)] = Q_{1m}[(u-u_0)/a]$; k=1/a

with $u = \log L$ (L=test luminance)
$u_0 = \log L_u$ (L_u=surround luminance)

$Q_{1m}[k(u-u_0)] = \frac{1}{\ln\sqrt{2}} \ln q[k(u-u_0)] - m$

$q[k(u-u_0)] = 1 + 1/[1 + \sqrt{2}e^{k(u-u_0)}]$

$Q_{11}[k(u-u_0) \to +\infty] = -1 \quad u = \log L$
$Q_{11}[k(u-u_0) = 0] = 0 \quad u_0 = \log L_u$
$Q_{11}[k(u-u_0) \to -\infty] = +1$ for m=1=1

DEG0L-5N

Achromatic receptor response function
$Q_{1m}[(x-u)/a]$

with $x = \log L$ (L=test luminance)
$u = \log L_u$ (L_u=surround luminance)

$Q_{1m}[(x-u)/a] = \frac{1}{\ln\sqrt{2}} \ln q[(x-u)/a] - m$

$q[(x-u)/a] = 1 + 1/[1 + \sqrt{2}e^{(x-u)/a}]$

$Q_{11}[(x-u)/a \to -\infty] = -1 \quad x = \log L$
$Q_{11}[(x-u)/a = 0] = 0 \quad u = \log L_u$
$Q_{11}[(x-u)/a \to +\infty] = +1$ for m=1=1

DEG0L-6N

Achromatic receptor response function
$Q_{ab}[x_r/a]$

with $x_r = \log[L/L_u]$ (L=test luminance)
L_u=surround luminance

$Q_{ab}[x_r/a] = \frac{b}{\ln\sqrt{2}} \ln q[x_r/a] - b$

$q[x_r/a] = 1 + 1/[1 + \sqrt{2}e^{(x_r/a)}]$

$Q_{a1}[x_r/a \to -\infty] = -1 \quad x = \log L$
$Q_{a1}[x_r/a = 0] = 0$ for b=1
$Q_{a1}[x_r/a \to +\infty] = +1$

DEG0L-7N

$Q_{ab}(x_r)$=achromatic response function & modified

see Richter, K. (1990): Computer grafic, Fig. 4.48
http://color.li.tu-berlin.de/RGB4ABF.PDF

$Q(x_r) = \frac{b}{\ln\sqrt{2}} \ln[1 + \frac{1}{1+2e^{x_r/a}}] - b$ a=0,5; b=1

m_r=1,95 m_a=0,5

L_u $L_u = 28$ cd/m²

$x_r = \log[L/L_u]$

DEG0L-8N

$F_{ab}(x)$ = tangens hyperbolicus (tanh) & modified

$F_{ab}(x) = b\,\frac{e^{x/a} - e^{-x/a}}{e^{x/a} + e^{-x/a}}$ a=1, b=1, e=2,718282

m_r=0,88 m_a=1,07 $F_{ab}(x) = b\,\frac{e^{x/a} - e^{-x/a}}{e^{x/a} + e^{-x/a}}$ a=2; b=1

m_r=0,49 m_a=0,24 $F_{ab}(x) = b\,\frac{e^{x/a} - e^{-x/a}}{e^{x/a} + e^{-x/a}}$ a=1; b=2

m_r=0,88 m_a=1,07 $F_{ab}(x) = b\,\frac{e^{x/a} - e^{-x/a}}{e^{x/a} + e^{-x/a}}$ a=2; b=2

m_r=0,49 m_a=0,24 $F_{ab}(x) = b\,\frac{e^{x/a} - e^{-x/a}}{e^{x/a} + e^{-x/a}}$ a=1; b=1

m_r=0,97 m_a=0,99 $F_{ab}(x) = b\,\frac{e^{x/a} - e^{-x/a}}{e^{x/a} + e^{-x/a}}$ a=2; b=1

m_r=0,98 m_a=0,99 $F_{ab}(x) = b\,\frac{e^{x/a} - e^{-x/a}}{e^{x/a} + e^{-x/a}}$ a=0,5; b=1, e=2,718282

m_r=0,97 m_a=0,96

color diffus luminance

L_u $L_u = 28$ cd/m²

$x = \ln L - \ln L_u$

DEG0L-9N

$Q_{ab}(x)$ = achromatic response function & modified

see Richter, K. (1990): Computer grafic, Fig. 4.48
http://color.li.tu-berlin.de/RGB4ABF.PDF

$Q_{ab}(x) = \frac{b}{\ln\sqrt{2}} \ln[1 + \frac{1}{1+2e^{x/a}}] - b$ a=1, b=1, e=2,718282

$Q_{ab}(x) = \frac{b}{\ln\sqrt{2}} \ln[1 + \frac{1}{1+2e^{x/a}}] - b$ a=2; b=1

$Q_{ab}(x) = \frac{b}{\ln\sqrt{2}} \ln[1 + \frac{1}{1+2e^{x/a}}] - b$ a=1; b=2

$Q_{ab}(x) = \frac{b}{\ln\sqrt{2}} \ln[1 + \frac{1}{1+2e^{x/a}}] - b$ a=2; b=2

$Q_{ab}(x) = \frac{b}{\ln\sqrt{2}} \ln[1 + \frac{1}{1+2e^{x/a}}] - b$ a=1; b=1

$Q_{ab}(x) = \frac{b}{\ln\sqrt{2}} \ln[1 + \frac{1}{1+2e^{x/a}}] - b$ a=0,5; b=1, e=2,718282

m_r=0,49 m_a=0,24

m_r=0,97 m_a=0,96

m_r=0,98 m_a=0,99

m_r=0,97 m_a=0,96

color diffus luminance

L_u $L_u = 28$ cd/m²

$x = \ln L - \ln L_u$

DEG0L-10N

TUB registration: 20210901-DEG0/DEG0L0N1.TXT /.PS
application for evaluation and measurement of display or print output

TUB material: code=rha4ta

TUB-test chart DEG0; Model of two visual response functions $F_{ab}(x_r)$ and $Q_{ab}(x_r)$
$\tanh(x_r)$ and modified functions with $e^{x}{}_{r}$ and $10^{x}{}_{r}$; $a^{n}=a^{1,0}$

input: *rgb*
output: *rgb*