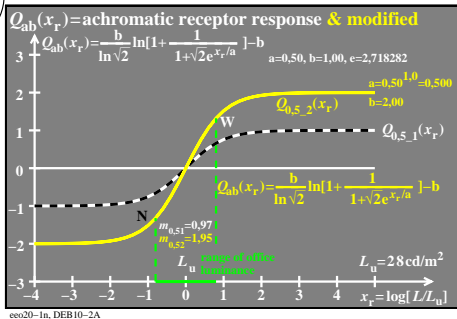
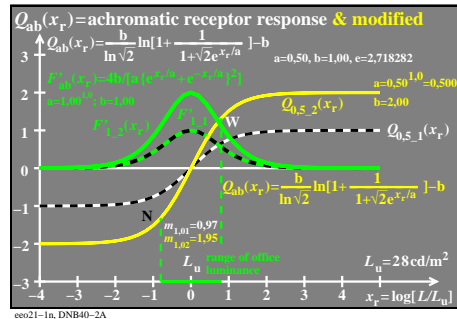


see similar files of the whole serie: <http://farbe.li.tu-berlin.de/eo2/eo210na.txt> / .ps
 technical information: <http://farbe.li.tu-berlin.de> or <http://color.li.tu-berlin.de>

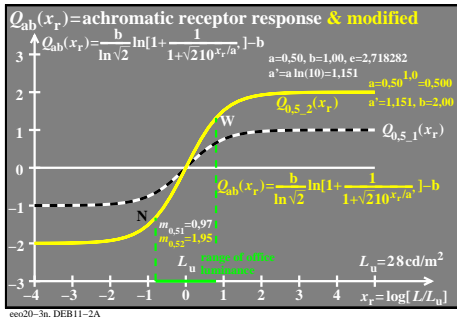
TUB registration: 20230701-eeo2/eo210na.txt /.ps
 application for evaluation and measurement of display or print output
 TUB material: code=rh4ta



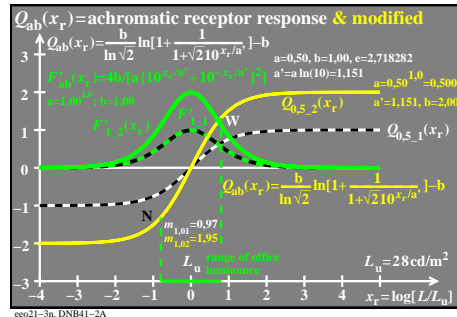
Achromatic receptor-response function
 $Q_{ab}[x_r/a]$
 with $x_r = \log [L/L_U]$ (L = test luminance)
 L_U =surround luminance
 $Q_{ab}[x_r/a] = \frac{b}{\ln \sqrt{2}} \ln \left[\frac{1}{1 + \sqrt{2} e^{(x_r/a)}} \right] - b$
function values for $b=1$ and $a>0$:
 $Q_{a1}[x_r/a \rightarrow -\infty] = -1$ $x = \log L, u = \log L_U$
 $Q_{a1}[x_r/a = 0] = 0$ $x_r = \log [L/L_U]$
 $Q_{a1}[x_r/a \rightarrow +\infty] = +1$ $= x - u$



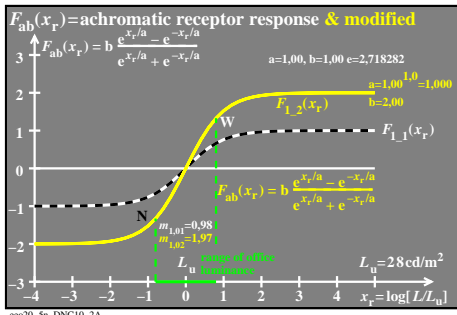
Derivation of achromatic receptor response
 $F'_{ab}[x_r/a]$ $x_r = \log(\text{relative luminance})$
 with $x_r = \log [L/L_U]$ (L = test luminance)
 L_U =surround luminance
 $F'_{ab}[x_r/a] = \frac{4b}{a \{ e^{x_r/a} + e^{-x_r/a} \}^2} = \frac{b}{a \sinh^2[x_r/a]}$
function values for $b=1$ and $a>0$:
 $F'_{a1}[x_r/a \rightarrow -\infty] = 0$ $x = \log L, u = \log L_U$
 $F'_{a1}[x_r/a = 1] = 1$ $x_r = \log [L/L_U]$
 $F'_{a1}[x_r/a \rightarrow +\infty] = 0$ $= x - u$



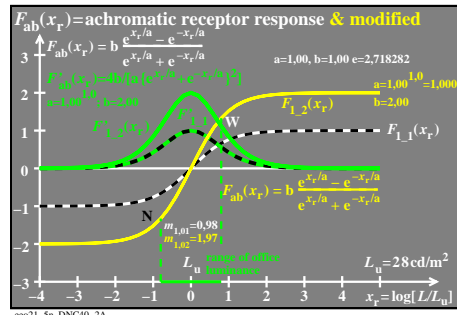
Achromatic receptor-response function
 $Q_{ab}[x_r/a']$ $a' = a \ln(10)$
 with $x_r = \log [L/L_U]$ (L = test luminance)
 L_U =surround luminance
 $Q_{ab}[x_r/a'] = \frac{b}{\ln \sqrt{2}} \ln \left[\frac{1}{1 + \sqrt{2} 10^{(x_r/a')}} \right] - b$
function values for $b=1$ and $a' = a \ln(10) > 0$:
 $Q_{a1}[x_r/a' \rightarrow -\infty] = -1$ $x = \log L, u = \log L_U$
 $Q_{a1}[x_r/a' = 0] = 0$ $x_r = \log [L/L_U]$
 $Q_{a1}[x_r/a' \rightarrow +\infty] = +1$ $= x - u$



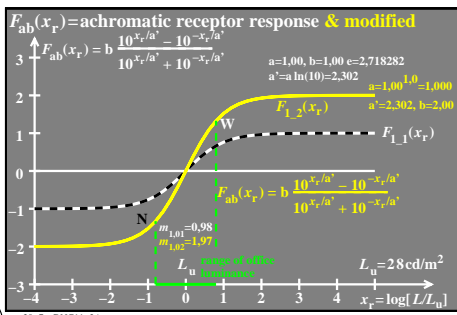
Derivation of achromatic receptor response
 $F'_{ab}[x_r/a]$ $x_r = \log(\text{relative luminance})$
 with $x_r = \log [L/L_U]$ (L = test luminance)
 L_U =surround luminance
 $F'_{ab}[x_r/a] = \frac{4b}{a \{ 10^{x_r/a} + 10^{-x_r/a} \}^2} = \frac{b}{a \sinh^2[x_r/a]}$
function values for $b=1$ and $a' = a \ln(10) > 0$:
 $F'_{a1}[x_r/a' \rightarrow -\infty] = 0$ $x = \log L, u = \log L_U$
 $F'_{a1}[x_r/a' = 1] = 1$ $x_r = \log [L/L_U]$
 $F'_{a1}[x_r/a' \rightarrow +\infty] = 0$ $= x - u$



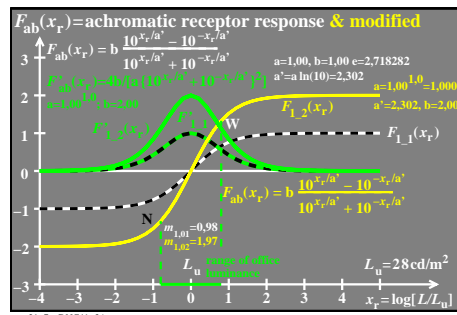
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 $F_{ab}[x_r/a]$ $x_r = \log(\text{relative luminance})$
 with $x_r = \log [L/L_U]$ (L = test luminance)
 L_U =surround luminance
 $F_{ab}[x_r/a] = b \frac{e^{x_r/a} - e^{-x_r/a}}{e^{x_r/a} + e^{-x_r/a}} = b \tanh [x_r/a]$
function values for $b=1$ and $a>0$:
 $F_{a1}[x_r/a \rightarrow -\infty] = -1$ $x = \log L, u = \log L_U$
 $F_{a1}[x_r/a = 0] = 0$ $x_r = \log [L/L_U]$
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TUB-test chart eo2; Model of two response functions $F_{ab}(x_r)$ & $Q_{ab}(x_r)$ and derivation $F'_{ab}(x_r)$
 Tangens hyperbolicus $\tanh(x_r)$ and modified functions with e^{x_r} and 10^{x_r} ; $a^n = a^{1,0}$