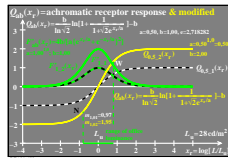
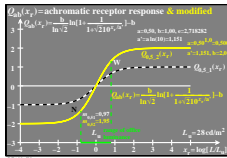


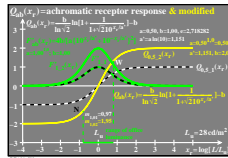
**Achromatic receptor-response function**  
 $Q_{ab}[x_r/a]$   
 with  $x_r = \log [L/L_u]$  ( $L$  = test luminance)  
 $L_u$  = surround luminance  
 $Q_{ab}[x_r/a] = \frac{b}{\ln \sqrt{2}} \left[ \frac{1}{1 + \sqrt{2} e^{(x_r/a)}} \right] - b$   
**function values for  $b=1$  and  $a>0$ :**  
 $Q_{a1}[x_r/a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



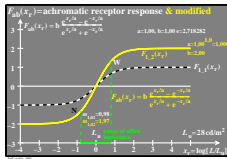
**Derivation of achromatic receptor response**  
 $F'_{ab}[x_r/a]$   $x_r = \log(\text{relative luminance})$   
 with  $x_r = \log [L/L_u]$  ( $L$  = test luminance)  
 $L_u$  = surround luminance  
 $F'_{ab}[x_r/a] = \frac{4b}{a [e^{x_r/a} + e^{-x_r/a}]^2} = \frac{b}{a \sinh^2[x_r/a]}$   
**function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



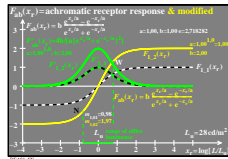
**Achromatic receptor-response function**  
 $Q_{ab}[x_r/a]$   $a' = a \ln(10)$   
 with  $x_r = \log [L/L_u]$  ( $L$  = test luminance)  
 $L_u$  = surround luminance  
 $Q_{ab}[x_r/a'] = \frac{b}{\ln \sqrt{2}} \left[ \frac{1}{1 + \sqrt{2} 10^{x_r/a'}} \right] - b$   
**function values for  $b=1$  and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



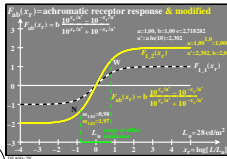
**Derivation of achromatic receptor response**  
 $F'_{ab}[x_r/a]$   $x_r = \log(\text{relative luminance})$   
 with  $x_r = \log [L/L_u]$  ( $L$  = test luminance)  
 $L_u$  = surround luminance  
 $F'_{ab}[x_r/a'] = \frac{4b}{a' [10^{x_r/a'} + 10^{-x_r/a'}]^2} = \frac{b}{a' \sinh^2[x_r/a']}$   
**function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



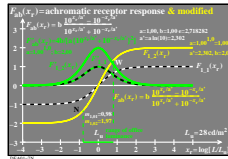
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 $F_{ab}[x_r/a]$   $x_r = \log(\text{relative luminance})$   
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 $L_u$  = surround luminance  
 $F_{ab}[x_r/a] = b \frac{e^{x_r/a} - e^{-x_r/a}}{e^{x_r/a} + e^{-x_r/a}} = b \tanh [x_r/a]$   
**function values for  $b=1$  and  $a>0$ :**  
 $F_{a1}[x_r/a \rightarrow -\infty] = -1$   $x = \log L, u = \log L_u$   
 $F_{a1}[x_r/a = 0] = 0$   $x_r = \log [L/L_u]$   
 $F_{a1}[x_r/a \rightarrow +\infty] = +1$   $x = x - u$



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**function values for  $b=1$  and  $a' = a \ln(10) > 0$ :**  
 $F_{a1}[x_r/a' \rightarrow -\infty] = -1$   $x = \log L, u = \log L_u$   
 $F_{a1}[x_r/a' = 0] = 0$   $x_r = \log [L/L_u]$   
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**function values for  $b=1$  and  $a' = a \ln(10) > 0$ :**  
 $F'_{a1}[x_r/a' \rightarrow -\infty] = 0$   $x = \log L, u = \log L_u$   
 $F'_{a1}[x_r/a' = 1] = 1$   $x_r = \log [L/L_u]$   
 $F'_{a1}[x_r/a' \rightarrow +\infty] = 0$   $x = x - u$