

## Derivation of achromatic receptor response

$$F'_{ab}[x_r/a] \quad x_r = \log(\text{relative luminance})$$

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  $a>0$  :

$$F'_{a1}[x_r/a \rightarrow -\infty] = 0 \quad x = \log L, \quad u = \log L_u$$

$$F'_{a1}[x_r/a = 1] = 1 \quad x_r = \log [L/L_u]$$

$$F'_{a1}[x_r/a \rightarrow +\infty] = 0 \quad = x - u$$