

functions $q[nx_r]$ for „achromatic signal”-description

with $x_r = \log L_r = \log L / L_b$
(L_b = background luminance)

$$q[nx_r] = 1 + 1/[1 + \sqrt{2} \cdot 10^{nx_r}]$$

function values (with $n = k \log e$):

$$\begin{aligned} q[nx_r \rightarrow +\infty] &= 1 \\ q[nx_r = 0] &= \sqrt{2} \\ q[nx_r \rightarrow -\infty] &= 2 \end{aligned}$$