functions $q[k(x-u)]$ „achromatic signal"-description

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

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

function values:

$$q[k(x-u) \to +\infty] = 1$$
$$q[k(x-u) = 0] = \sqrt{2}$$
$$q[k(x-u) \to -\infty] = 2$$