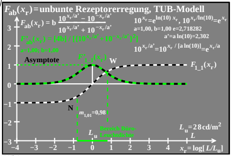
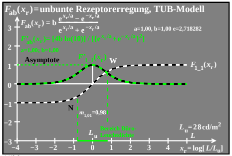
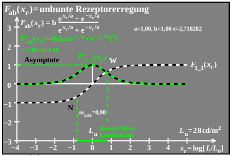
http://farbe.li.tu-berlin.de/igi4/igi4l0n1.txt /.ps; nur Vektorgrafik VG; Start-Ausgabe
Siehe ähnliche Dateien: http://farbe.li.tu-berlin.de/igi4/igi4.htm



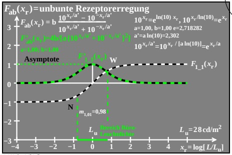
igi40−1n



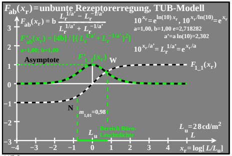
igi40−2n



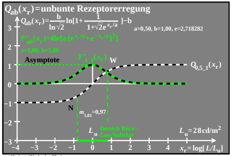
igi41−1n, iej31−5n



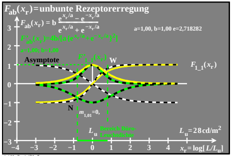
igi41−2n, iej31−7n



igi40−3n



igi40−4n, iej31−1n, hex30−4n



igi41−3n, iej31−5n

Mathematikgleichungen der Hyperbelfunktionen

Siehe: *Papula, L., (2003), Mathematische Formelsammlung, Vieweg*

$$F_{ab}(x_r/a) = b\,\frac{e^{x_r/a}-e^{-x_r/a}}{e^{x_r/a}+e^{-x_r/a}} = b\,\frac{u(x_r/a)}{v(x_r/a)} \quad [1]$$

$$F'_{ab}(x_r/a) = b\,\frac{u'(x_r/a)\,v(x_r/a)-u(x_r/a)\,v'(x_r/a)}{v^2(x_r/a)} \quad [2]$$

$$F'_{ab}(x_r/a) = b\,\frac{v^2(x_r/a)-u^2(x_r/a)}{a\,v^2(x_r/a)} \quad [3]$$

$$F'_{ab}(x_r/a) = \frac{4b}{a\,[e^{x_r/a}+e^{-x_r/a}]^2} \quad [4]$$

igi41−4n, inj31−8n mod

Mathematikgleichungen der Hyperbelfunktionen

Siehe: *Handbook of Mathematical functions, NBS, USA, Sec. 4.5*

$$\sinh(x) = \frac{e^x-e^{-x}}{2} \quad [1], \quad \cosh(x) = \frac{e^x+e^{-x}}{2} \quad [2]$$

$$\tanh(x) = \frac{\sinh(x)}{\cosh(x)} = \frac{e^x-e^{-x}}{e^x+e^{-x}} \quad [3]$$

$$\tanh(x/2) = \frac{\sinh(x)}{\cosh(x)+1} = \frac{\cosh(x)+1}{\sinh(x)} = \frac{e^{x/2}-e^{-x/2}}{e^{x/2}+e^{-x/2}} \quad [4]$$

$$\sinh^2(x) + \cosh^2(x) = 1 \quad [5]$$

igi40−5n, iej30−6n

Mathematikgleichungen der Hyperbelfunktionen

Siehe: *Handbook of Mathematical functions, NBS, USA, Sec. 4.5*

$$F_{1b}(x) = b\tanh(x) = b\,\frac{e^x-e^{-x}}{e^x+e^{-x}} = b\,\frac{u(x)}{v(x)} \quad [1]$$

$$F'_{1b}(x) = b\,\frac{u'(x)\,v(x)-u(x)\,v'(x)}{v^2(x)} \quad [2]$$

$$F'_{1b}(x) = b\,\frac{v^2(x)-u^2(x)}{a\,v^2(x)} \quad [3]$$

$$F'_{1b}(x) = \frac{4b}{[e^x+e^{-x}]^2} = \frac{b}{\cosh^2(x)} \quad [4]$$

igi40−6n, iej31−6n

Mathematikgleichungen der Hyperbelfunktionen

Siehe: *Handbook of Mathematical functions, NBS, USA, Sec. 4.5*

$$F_{ab}(x/a) = b\tanh(x/a) = b\,\frac{e^{x/a}-e^{-x/a}}{e^{x/a}+e^{-x/a}} = b\,\frac{u(x/a)}{v(x/a)} \quad [1]$$

$$F'_{ab}(x/a) = b\,\frac{u'(x/a)\,v(x/a)-u(x/a)\,v'(x/a)}{v^2(x/a)} \quad [2]$$

$$F'_{ab}(x/a) = b\,\frac{v^2(x/a)-u^2(x/a)}{a\,v^2(x/a)} \quad [3]$$

$$F'_{ab}(x/a) = \frac{4b}{a\,[e^{x/a}+e^{-x/a}]^2} = \frac{b}{a\cosh^2(x/a)} \quad [4]$$

igi41−5n, inj31−8n mod

Mathematikgleichungen der Hyperbelfunktionen

Siehe: *Handbook of Mathematical functions, NBS, USA, Sec. 4.5*

$$F_{ab}(x_r/a) = b\,\frac{e^{x_r/a}-e^{-x_r/a}}{e^{x_r/a}+e^{-x_r/a}} = b\,\frac{u(x_r/a)}{v(x_r/a)} \quad [1]$$

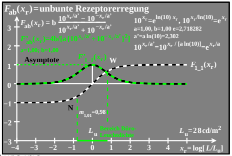
$$F'_{ab}(x_r/a) = b\,\frac{v^2(x_r/a)-u^2(x_r/a)}{a\,v^2(x_r/a)} \quad [2]$$

$$F'_{ab}(x_r/a) = \frac{4b}{a\,[e^{x_r/a}+e^{-x_r/a}]^2} \quad [3]$$

$$x_r = \log(L/L_u) = \log(L_r) \quad [4]$$

$$e^{x_r/a} = 10^{x_r/a'} = L_r^{1/a'} \quad [5] \qquad a' = a\ln(10) \quad [6]$$

igi41−6n, inj31−8n mod



igi40−7n, iej31−7n

Unbunt-Rezeptorerregungsfunktion
$Q_{ab}[x_r/a]$ für a=0,5 und b=1,0

mit x_r=log [L/L_u] (L=Testleuchtdichte)
L_u=Umfeld-Leuchtdichte

$$Q_{ab}[x_r/a] = \frac{b}{\ln\sqrt{2}}\,\ln\left[\frac{1}{1+\sqrt{2}\,e^{(x_r/a)}}\right] - b$$

Funktionswerte für *b*=1 und jedes *a*>0 :

$Q_{a1}[x_r/a \to -\infty] = -1$ $\quad x = \log L$, $u = \log L_u$
$Q_{a1}[x_r/a = 0] = 0$ $\quad x_r = \log\,[L/L_u]$
$Q_{a1}[x_r/a \to +\infty] = +1$ $\quad = x - u$

igi40−8n, iej30−2n

Mathematikgleichungen der Hyperbelfunktionen

Siehe: *Handbook of Mathematical functions, NBS, USA, Sec. 4.5*

$$F_{ab}(x/a) = b\tanh(x/a) = b\,\frac{e^{x/a}-e^{-x/a}}{e^{x/a}+e^{-x/a}} = b\,\frac{u(x/a)}{v(x/a)} \quad [1]$$

$$F'_{ab}(x/a) = b\,\frac{u'(x/a)\,v(x/a)-u(x/a)\,v'(x/a)}{v^2(x/a)} \quad [2]$$

$$u'(x/a) = 1/a\,[e^{x/a}-e^{-x/a}] = (1/a)v(x/a) \quad [3]$$

$$v'(x/a) = 1/a\,[e^{x/a}+e^{-x/a}] = (1/a)u(x/a) \quad [4]$$

$$F'_{ab}(x/a) = b\,\frac{v^2(x/a)-u^2(x/a)}{a\,v^2(x/a)} \quad [5]$$

igi41−7n, inj31−8n mod mod

Mathematikgleichungen der Hyperbelfunktionen

Siehe: *Handbook of Mathematical functions, NBS, USA, Sec. 4.5*

$$F_{ab}(x_r/a) = b\,\frac{e^{x_r/a}-e^{-x_r/a}}{e^{x_r/a}+e^{-x_r/a}} \quad [1]$$

$$F'_{ab}(x_r/a) = \frac{dF_{ab}(x_r/a)}{d(x_r/a)} = \frac{4b}{a\,[e^{x_r/a}+e^{-x_r/a}]^2} \quad [2]$$

$$x_r = \log(L/L_u) = \log(L_r) \quad [3]$$

$$e^{x_r/a} = 10^{x_r/a'} = L_r^{1/a'} \quad [4] \qquad a' = a\ln(10) \quad [5]$$

$$F'_{ab}(x_r/a) = \frac{4b}{a\,[L_r^{1/a'}+L_r^{-1/a'}]^2} \quad [7]$$

igi41−8n mod, inj31−8n mod

TUB-Prüfvorlage igi4; Modell für normierte Erregungsfunktion $F_{ab}(x_r)$ und Ableitung $F'_{ab}(x_r)$
Mathematische Berechnung der Ableitung $F'_{ab}(x_r)$, des Kontrastes $L/\Delta L$ und der Unterscheidung ΔL

Siehe ähnliche Dateien der ganzen Serie: http://farbe.li.tu-berlin.de/igis.htm
Technische Information: http://farbe.li.tu-berlin.de oder http://color.li.tu-berlin.de

TUB-Registrierung: 20250401-igi4/igi4l0n1.txt /.ps
Anwendung für Beurteilung und Messung von Display- oder Druck-Ausgabe
TUB-Material: Code=rha4ta