

log ΔY CIE tristimulus value Y difference

$$\log(\Delta Y) = \Delta Y^* = (t/a) \ln(1 + a \cdot Y) \quad a=0.3411 \quad t/a=258.6$$
$$1 + 10 \frac{dL^*}{dY} = t / (1 + a \cdot Y) \quad s=0.017 \quad q=0.0058$$
$$dL^*/dY = t / [1 + (a \cdot Y_{11}) (Y/Y_{11})] \quad t=88.23$$

tristimulus value difference

$$\log(dY) = \log [(s + q \cdot Y) / c] \quad c=1.5$$
$$= \log [(1 + a \cdot Y) / t] \quad t=c/s=88.23$$
$$= \log [(1 + (a \cdot Y_u) (Y/Y_u)) / t]$$
$$= \log [(1 + b \cdot (Y/Y_u)) / t] \quad b = a \cdot Y_u = 6.14$$
$$-1 \leq -0.1 \quad Y_{11}=18, dY_{11}=0.08, dY_{11}/Y_{11}=0.004$$
 $\log(dY) = -1.09, m_{ij} = 0.86$

**application
range**

$$Y_u = 18 \cdot 100 \cdot Y$$

A horizontal number line labeled $\log(Y)$ at the right end. It has tick marks at -2, -1, 0, 1, and 2. A green dashed line segment is drawn from 0 to 1.