

Beziehung CIELAB (L^*, a^*, b^*) und adaptierter (a) CIELAB (C^*_{ab}, L^*)
System: GG88_FRS09_92_D65 25%
 $P_{lab} = (L^* - L_N^*) / (L_N^* - L_N^{*N})$
Bunton: $h^{-1}_{2SC} = 172/360; h^{BMSO} = 365/360$

$$L^* = a^* - a^{*N} - l^* \text{lab} [a^*W - a^{*N}]$$

$$b^* = b^* - b^{*N} - l^* \text{lab} [b^*W - b^{*N}]$$

$$C^*_{ab,a} = [a^*_{\perp}^2 + b^*_{\perp}^2]^{1/2}$$

Helligkeit L^*
100

Adaptierter (a) CIELAB ($c^*_{\text{lab}}, l^*_{\text{lab}}$) und relatives CIELAB ($c^*_{\text{lab}}, l^*_{\text{lab}}, b^*_{\text{lab}}$)
 System: GG88_FSR09_92_D65_25%_O1
 $l^*_{\text{lab}} = (L^* - L^*_N) / (L^*W - L^*_N)$
 Buntton: h^* $o_{25Y} = 52/360$; h^* $c_{25Y} = 253/360$
 $c^*_{\text{lab}} = C^*_{\text{lab}} / C^*_{\text{lab},M}$
 $M = \text{Maximalfarbe}$

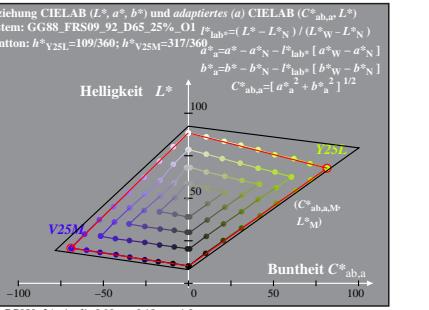
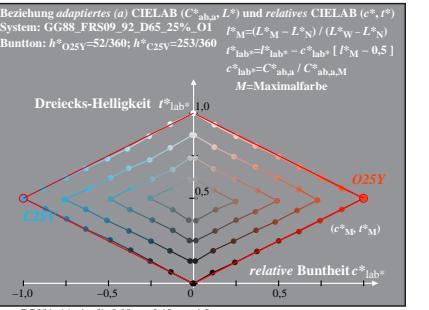


Diagramm zur Darstellung der CIELAB- und CIECAM02-Räume im CLAB-Buntonwinkel.

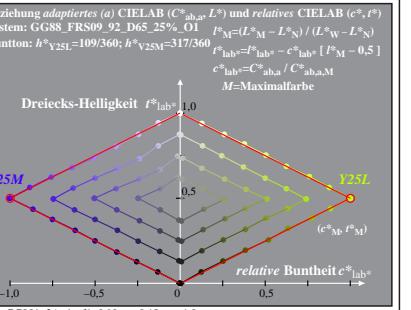
Die Achsen sind farblich markiert: L (rot), a (grün), b (blau).

Die Formeln für den Buntonwinkel sind:

$$\text{buntheit} = \sqrt{a_{\text{ab}}^2 + b_{\text{ab}}^2}$$



$$\begin{aligned}
 & \text{Beziehung } \text{ohv}^{\text{obs}} \text{ und relative Bunttunth } t_{\text{ohv}}^{\text{obs}} \text{ und Dreiecks-Helligkeit } t_{\text{ohv}}^{\text{sys}} \\
 & \text{System: } \text{GG88_FRS09_92_D65} \quad 25\% \quad \text{OI} \\
 & \text{Bunttonth: } h^*_{\text{OZV}} = 52/360; \quad h^*_{\text{C25V}} = 253/360 \\
 & \text{Ergebnis: } \epsilon_{\text{ohv}} = t_{\text{ohv}}^{\text{obs}} - t_{\text{ohv}}^{\text{sys}}; \quad t_{\text{ohv}}^{\text{obs}} = t_{\text{ohv}}^{\text{sys}} + \epsilon_{\text{ohv}} \\
 & \epsilon_{\text{ohv}} = \max(\text{ohv}^{\text{obs}}) - \min(\text{ohv}^{\text{obs}}) \\
 & \text{Bunttonth: } h^* = 1 - \max(\text{ohv}^{\text{obs}}) = 1 - t_{\text{ohv}}^{\text{obs}} \\
 & \text{Ergebnis: } \epsilon_{\text{ohv}} = \min(\text{ohv}^{\text{obs}}) - 1 - t_{\text{ohv}}^{\text{obs}} \\
 & t_{\text{ohv}}^{\text{obs}} = -w^* + 0.5 \epsilon_{\text{ohv}}^{\text{obs}}
 \end{aligned}$$



Die Farbtafel zeigt die Beziehung zwischen den farbimetrischen Werten der CIELAB- und CIELAB*-Farbmodelle.

- CIELAB-Daten:**
 - GG88_FRS09_92_D65_25%_OI
 - ELAB-Bunntonit: $L=34, a=-92, b=143, 225, 313, 338$
 - $\Delta E_{ab} = [52, 109, 172, 253, 317, 365]$
- CIELAB*-Daten:**
 - $L^*=100, a^*=125, b^*=135$
 - $L^*=100, a^*=0, b^*=0$ (OOGY)
 - $L^*=100, a^*=0, b^*=100$ (OOYY)
- Winkelangaben:**
 - $\alpha_{ab} = 125^\circ$
 - $\alpha_{a^*b^*} = 135^\circ$
 - $\alpha_{a^*b^*} = 0^\circ$ (OOGY)
 - $\alpha_{a^*b^*} = 90^\circ$ (OOYY)
- Maximalfarbe:** $M = \text{Maximalfarbe}$
- Relative Buntnheit:** $a^*_{\text{max}} / b^*_{\text{max}}$

The figure shows a Nyquist plot in the complex plane with the real axis pointing right and the imaginary axis pointing up. The origin is labeled '0'. A unit circle is centered at the origin. Four points on the unit circle are labeled with their corresponding stability margins:

- M250**: Margin of 250°, indicated by a red arc from the positive real axis to the point.
- M000**: Margin of 0°, indicated by a black line segment from the origin to the point.
- V25M**: Margin of 25°, indicated by a blue arc from the positive real axis to the point.
- V00M**: Margin of 0°, indicated by a black line segment from the origin to the point.

Other labels include **C00V** and **CSV** near the negative real axis, and **-1,0** at both ends of the real axis.

$$\begin{aligned}
& \text{Ziehung } c^{\text{obs}} \text{ und relative Bunttheit } c^{\text{obs}}_{\text{rel}} \text{ und Dreiecks-Helligkeit } t^{\text{obs}}_{\text{rel}}: \\
& \text{Gesamt: } \text{GG88_FSR09_92_D65_25\%_OI} \\
& \text{Anteil: } h^{\text{obs}}_{\text{Y2S1}} = 109/360; h^{\text{obs}}_{\text{Y2M}} = 317/360 \\
& \text{Ergebnis: } c^{\text{obs}} = c^{\text{lab}} + c^{\text{obs}}_{\text{rel}} - t^{\text{obs}}_{\text{rel}} \cdot c^{\text{lab}} \\
& \quad \text{mit: } n = 1 - \max(t^{\text{obs}}) = 1 - l^{\text{obs}} \\
& \quad w = \min(t^{\text{obs}}) = 1 - d^{\text{obs}} \\
& \quad t^{\text{obs}}_{\text{rel}} = w + 0,5 \cdot c^{\text{obs}}_{\text{rel}} \\
& \text{Dreiecks-Helligkeit } t^{\text{obs}}_{\text{rel}} \text{ von } 1,0 \\
& \quad \text{Maximal-Maxima}
\end{aligned}$$

