

Equations: colorimetric data transfer from LCH^* (CIELAB) to nce^* and rgb^*_3

Given: CIELAB data of any colour L^* , C^*_{ab} , $h_{ab} = LCH^* = LAB^*LCH^*$ or L^* , a^* , b^*

CIELAB data L^*_X , $C^*_{ab,X}$, $h_{ab,X}$, a^*_X , b^*_X of eight basic colours $X = RJGC'BM'NW$

Aim: nce^* and rgb^*_3 elementary colour data of the given colour (in example M located between R and J)

CIELAB hue angle of maximum colour M	$h_{ab,M} = h_{ab}$	$(0 \leq h_{ab} \leq 360)$	(1)
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Relative device hue angle ratio of M	$\alpha_M = [h_{ab,M} - h_{ab,R}] / [h_{ab,J} - h_{ab,R}]$		(2)
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CIELAB data L^*_M , a^*_M , b^*_M , $C^*_{ab,M}$ of M	$L^*_M = \alpha_M L^*_J + (1 - \alpha_M) L^*_R$		(3)
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	$a^*_M = \alpha_M a^*_J + (1 - \alpha_M) a^*_R$		(4)
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	$b^*_M = \alpha_M b^*_J + (1 - \alpha_M) b^*_R$		(5)
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	$C^*_{ab,M} = [a^{*2}_M + b^{*2}_M]^{1/2}$		(6)
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relative lightness of the given colour	$l^* = [L^* - L^*_N] / [L^*_W - L^*_N]$		(7)
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relative chroma of the given colour	$c^* = C^*_{ab} / C^*_{ab,M}$		(8)
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relative triangle lightness of the given colour	$t^* = l^* - [L^*_M - L^*_N] / [L^*_W - L^*_N] c^* + 0,5 c^*$		(9)
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relative blackness of the given colour	$n^* = 1 - t^* - 0,5 c^*$		(10)
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relative whiteness of the given colour	$w^* = 1 - n^* - c^*$		(11)
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elementary hue angle of the given colour	$e^* = \text{function} [h_{ab}]$	(with table or equation)	(12)
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relative rgb^*_3 , M data of M	$r^*_{3,M} = \alpha_M r^*_{3,J} + (1 - \alpha_M) r^*_{3,R}$		(13)
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	$g^*_{3,M} = \alpha_M g^*_{3,J} + (1 - \alpha_M) g^*_{3,R}$		(14)
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	$b^*_{3,M} = \alpha_M b^*_{3,J} + (1 - \alpha_M) b^*_{3,R}$		(15)
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relative rgb^*_3 data of the given colour	$r^*_3 = w^* + c^* r^*_{3,M}$		(16)
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	$g^*_3 = w^* + c^* g^*_{3,M}$		(17)
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	$b^*_3 = w^* + c^* b^*_{3,M}$		(18)
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