Equations: colorimetric data transfer from rgb_{d} to nce^*_{d} data and LCH^*_{d} data

Given: rgb_{d} **device colour data of any colour** $rgb_{\mathrm{d}} = lab^*rgb_{\mathrm{d}}$ **and of 48 step colour circle** $j=0$ **to 47** $rgb_{\mathrm{Md},j}$ **and CIELAB data** $L^*_{\mathrm{Md},j}$, $C^*_{\mathrm{ab,Md},j}$, $h_{\mathrm{ab,Md},j} = LCH^*_{\mathrm{Md},j}$

Aim: calculate nce^*_{d} **with** $(0<=n^*_{\mathrm{d}}, c^*_{\mathrm{d}}, e^*_{\mathrm{d}}<=1)$ **(similar to NCS data) and** $LCH^*_{\mathrm{a,d}}$ **data of the device colour**

Data of a given device (d) colour

relative chroma of the device colour	$c^*_{\mathrm{d}} = max\,[\,rgb_{\mathrm{d}}\,] - min\,[\,rgb_{\mathrm{d}}\,]$	(1)
relative blackness of the device colour	$n^*_{\mathrm{d}} = 1 - max\,[\,rgb_{\mathrm{d}}\,]$	(2)
relative triangle lightness of the device colour	$t^*_{\mathrm{d}} = 1 - n^*_{\mathrm{d}} - 0{,}5\, c^*_{\mathrm{d}}$	(3)
relative red-green chroma in 6x60 degree system s	$a^*_{\mathrm{rs,d}} = r_{\mathrm{d}}\, cos(30) + g_{\mathrm{d}}\, cos(150)$	(4)
relative yellow-blue chroma in 6x60 degree system s	$b^*_{\mathrm{rs,d}} = r_{\mathrm{d}}\, sin(30) + g_{\mathrm{d}}\, sin(150) + b_{\mathrm{d}}\, sin(270)$	(5)
hue angle in 6x60 degree system s	$h_{\mathrm{ab,s,d}} = arctan[\, b^*_{\mathrm{rs,d}} / a^*_{\mathrm{rs,d}}]$ $(0<= h_{\mathrm{ab,s,d}}<=360)$	(6)
hue number in 6x60 degree system s	$e^*_{\mathrm{d}} = h_{\mathrm{ab,s,d}}/360$ $(0<=e^*_{\mathrm{d}}<=1)$	(7)
CIELAB hue angle in device system	$h_{\mathrm{ab,d}} = \text{function}\,[h_{\mathrm{ab,s,d}}]$ (with table/equations)	(8)
adapted CIELAB LCH^*_{d} data of maximum colour M_{d}	$L^*_{\mathrm{Md}} = \text{function}\,[h_{\mathrm{ab,d}}]$ (with table/equations)	(9)
	$C^*_{\mathrm{ab,Md}} = \text{function}\,[h_{\mathrm{ab,d}}]$ (with table/equations)	(10)
	$h_{\mathrm{ab,Md}} = h_{\mathrm{ab,d}}$	(11)
relative lightness of maximum colour M_{d}	$l^*_{\mathrm{Md}} = [\, L^*_{\mathrm{Md}} - L^*_{\mathrm{Nd}}\,] / [\, L^*_{\mathrm{Wd}} - L^*_{\mathrm{Nd}}\,]$	(12)
relative lightness of the device colour	$l^*_{\mathrm{d}} = t^*_{\mathrm{d}} + l^*_{\mathrm{Md}}\, c^*_{\mathrm{d}} + 0{,}5\, c^*_{\mathrm{d}}$	(13)
CIELAB LCH^*_{d} data of the device colour	$L^*_{\mathrm{d}} = l^*_{\mathrm{d}}\,[\, L^*_{\mathrm{Wd}} - L^*_{\mathrm{Nd}}\,] + L^*_{\mathrm{Nd}}$	(14)
	$C^*_{\mathrm{ab,d}} = c^*_{\mathrm{d}}\, C^*_{\mathrm{ab,Md}}$	(15)

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