IC2014

Faculty of Graphic Arts,
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Approaches to linearization in ICC profiles

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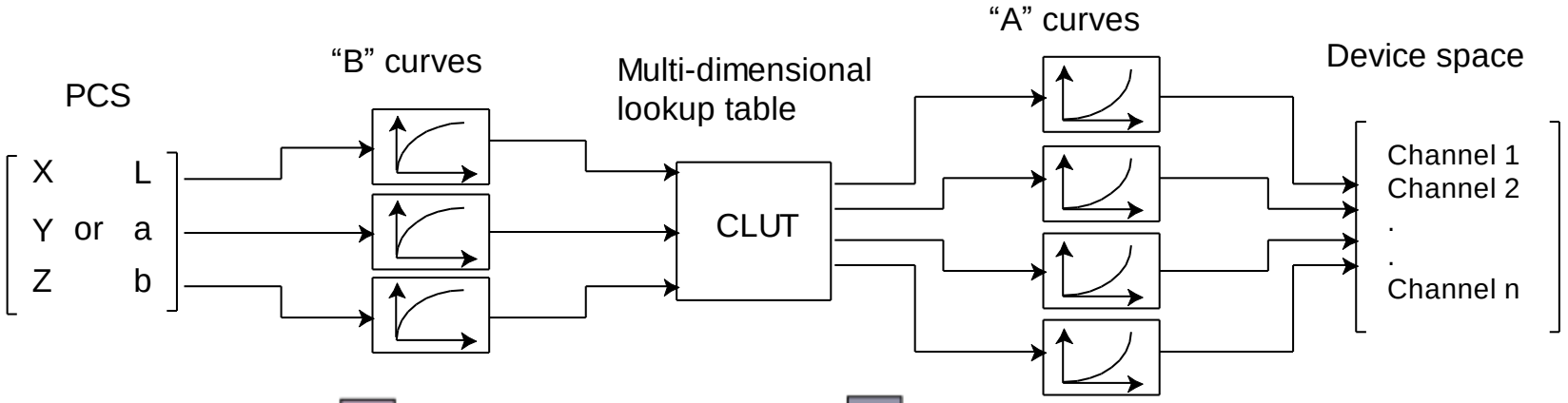
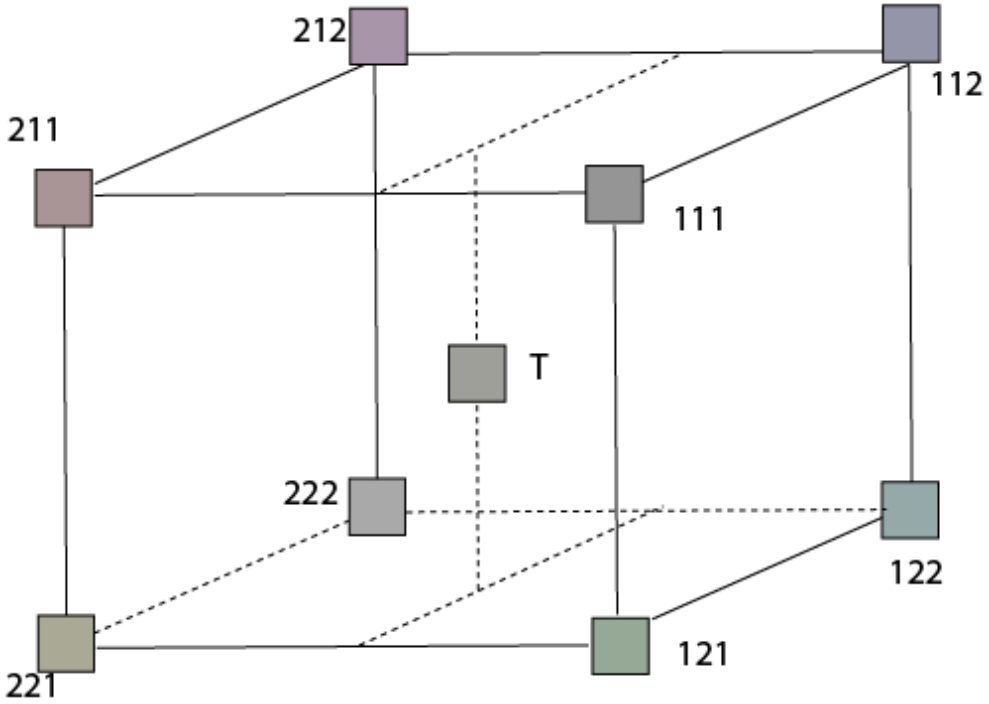
Introduction



ICC processing model



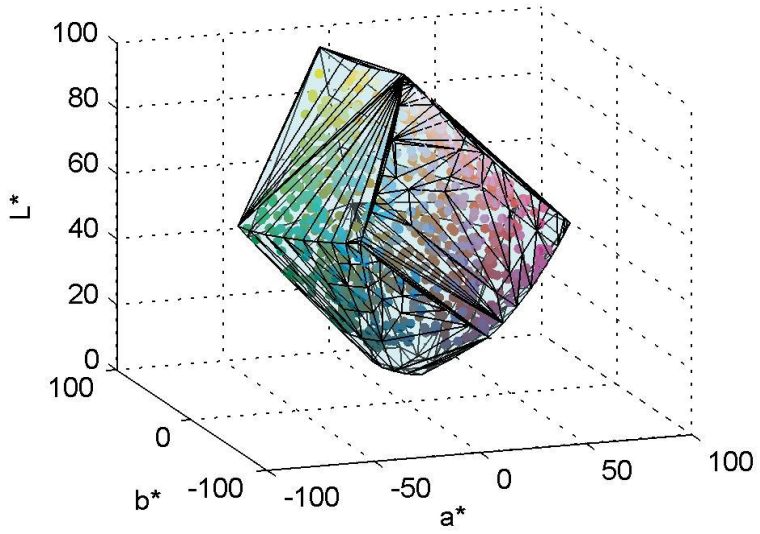
Interpolation

Literature overview

- Profiles
  - Zeng, 2002.
    - PCS choice
    - 3D LUT type and size
    - 1D LUT use and size
- Linearization approaches
  - Noyes et al. 2000.
    - minimizing CIE ΔE
    - with respect to CIE L* and b*

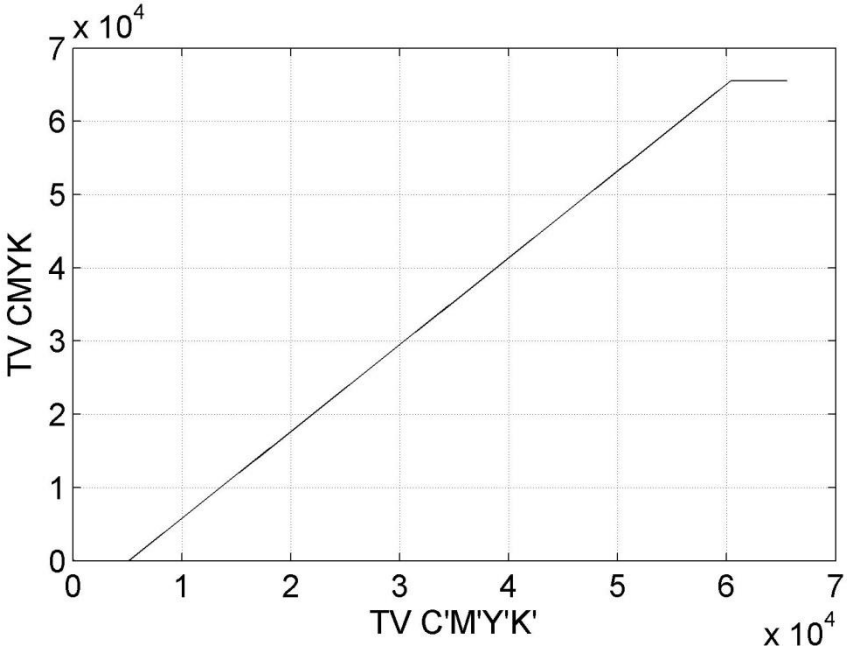
Problem statement and methodology

- To what extent linearization affects accuracy of a standard profile?
- ISO Coated v2
- Polyharmonic spline model

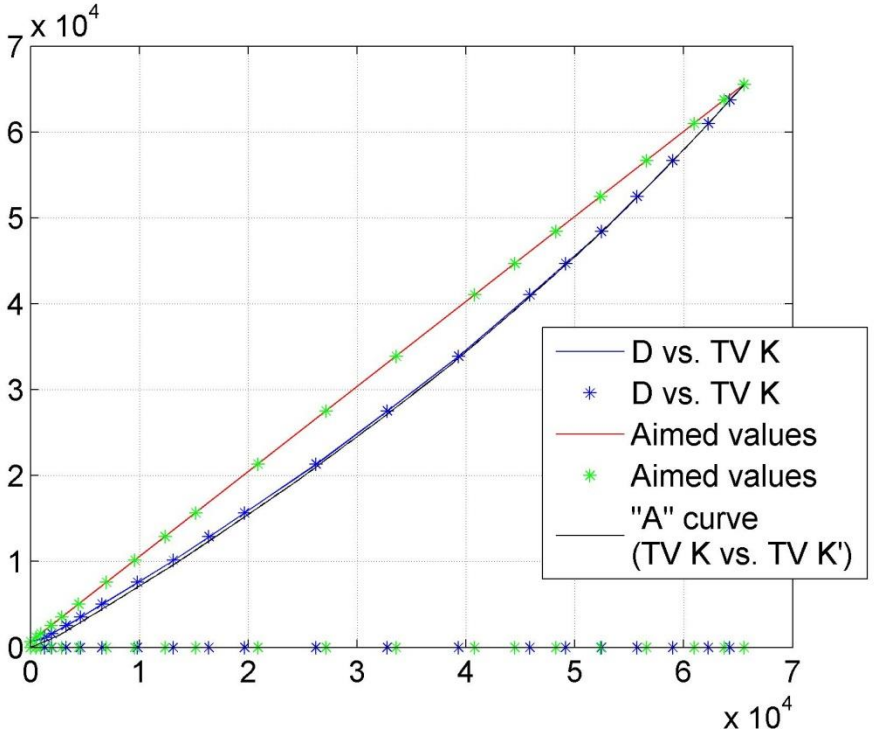


Test set

Problem statement and methodology

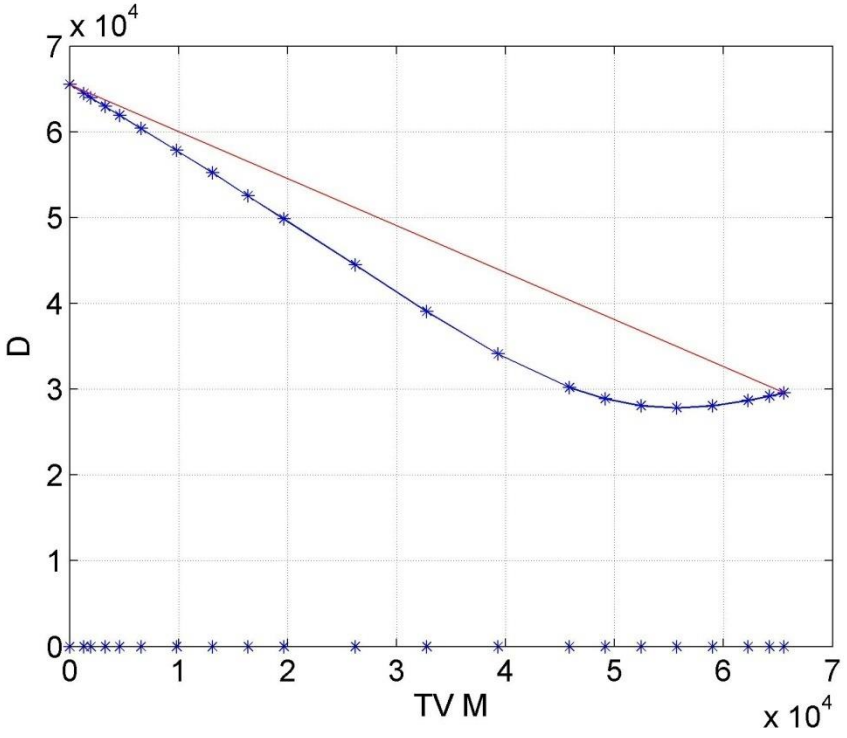


Generic “A curve”

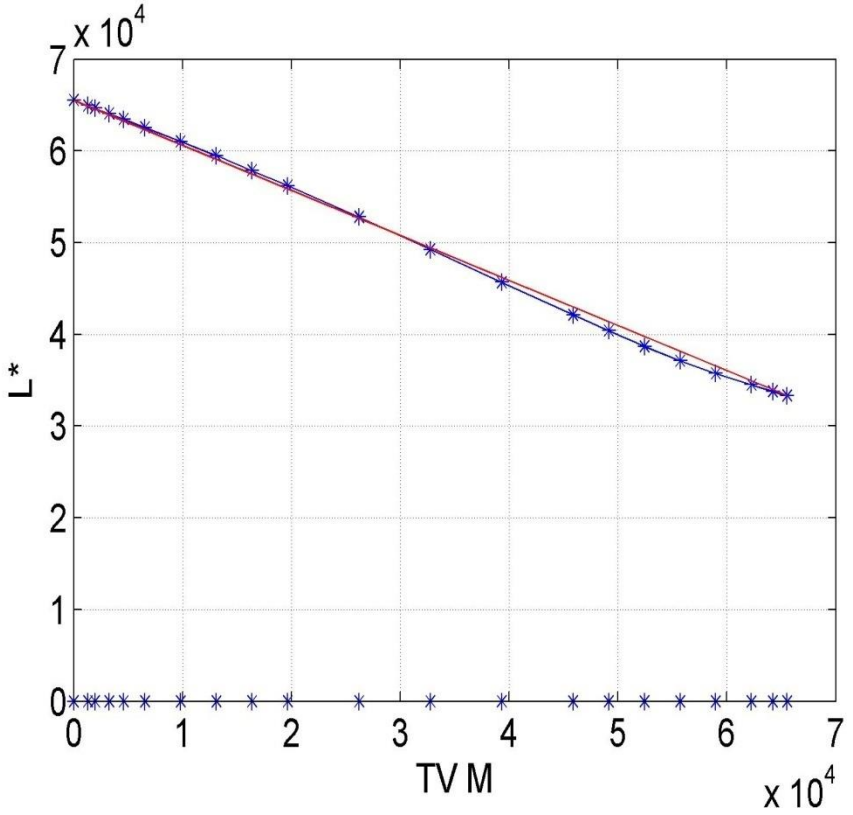


D vs. TV K and linearization “A” curve

Results



Magenta ink linearization to D

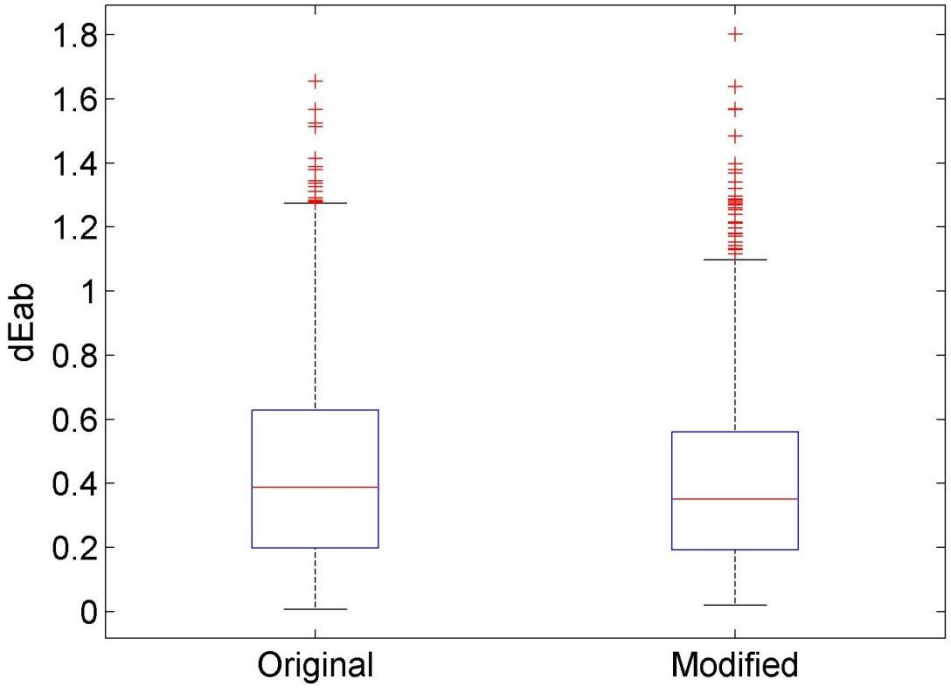


Magenta ink linearization to L*

Results

Numerical evaluation

N = 918	Min ΔE	Mean ΔE	Median ΔE	Max ΔE
Original	0,01	0,45	0,39	1,66
Modified	0,02	0,42	0,35	1,80



Boxplots of error distributions

Conclusions

- Linearization minimizing CIE ΔE can be problematic
- Standard 33x33x33 CLUT size provides sufficient accuracy
- Linearization does not improve accuracy significantly on standard 33x33x33 CLUT size