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Challenges in N-Colour Printing

Bressanone, Italy

William Li

Colour Products Manager

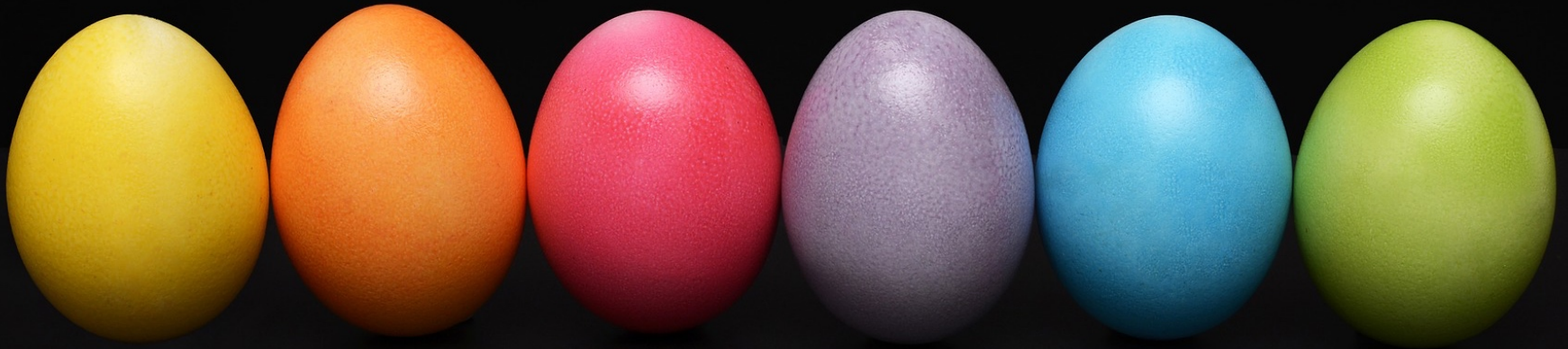
Kodak





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ECG vs. CMYK





Challenge 1: Characterization

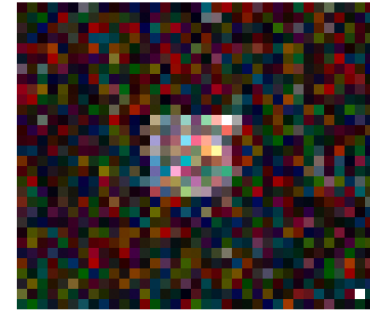
- **Combinatorial Math:**
 - 10^4 vs. 10^7
- **Light-inks vs. Gamut Expansion**





Multi-Vendor Approach for International Standards

- ECG target currently under development (since 2017) for 7-colour print systems.
- Development almost complete.





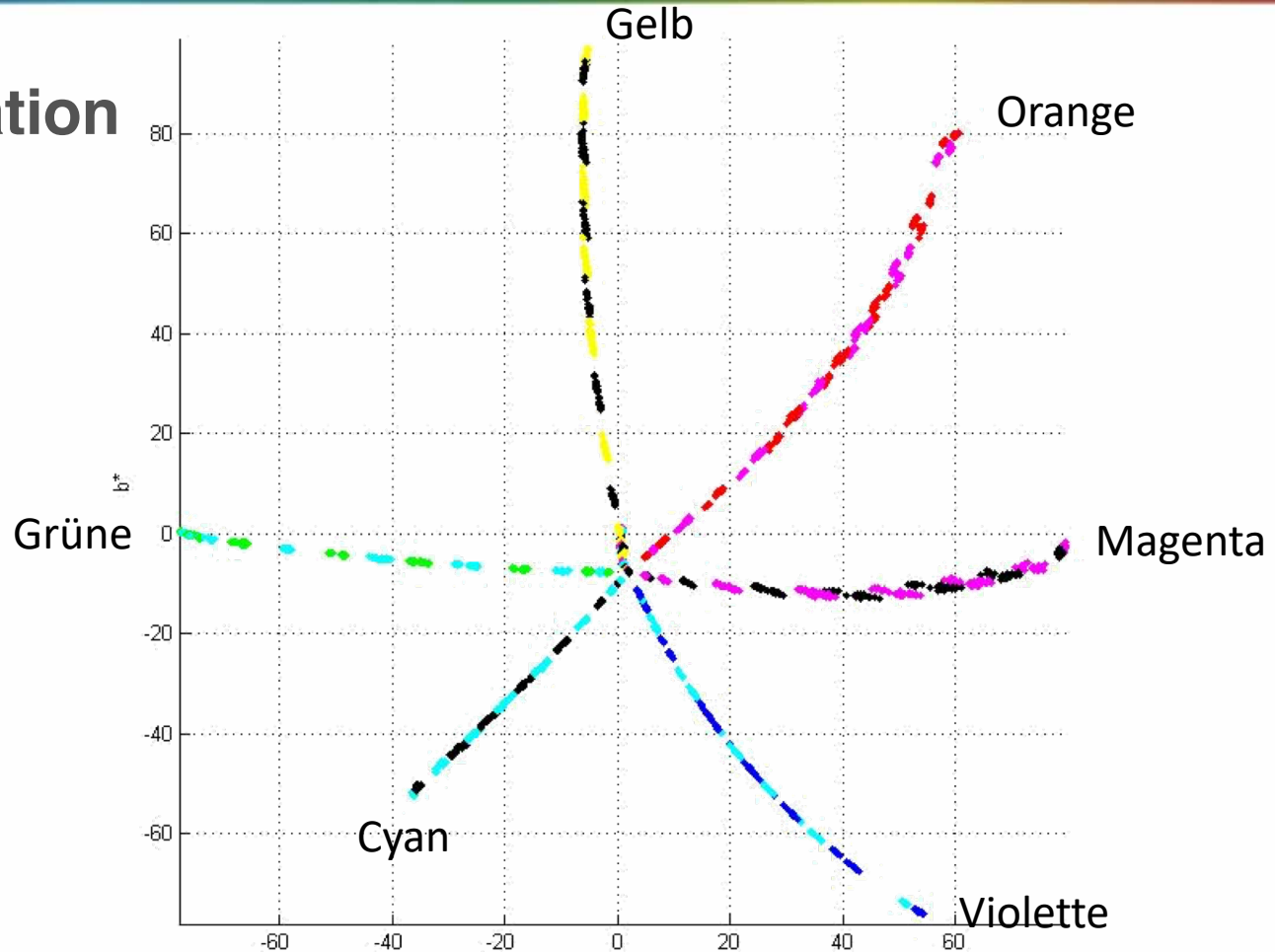
Challenge #2: Printing/Inking

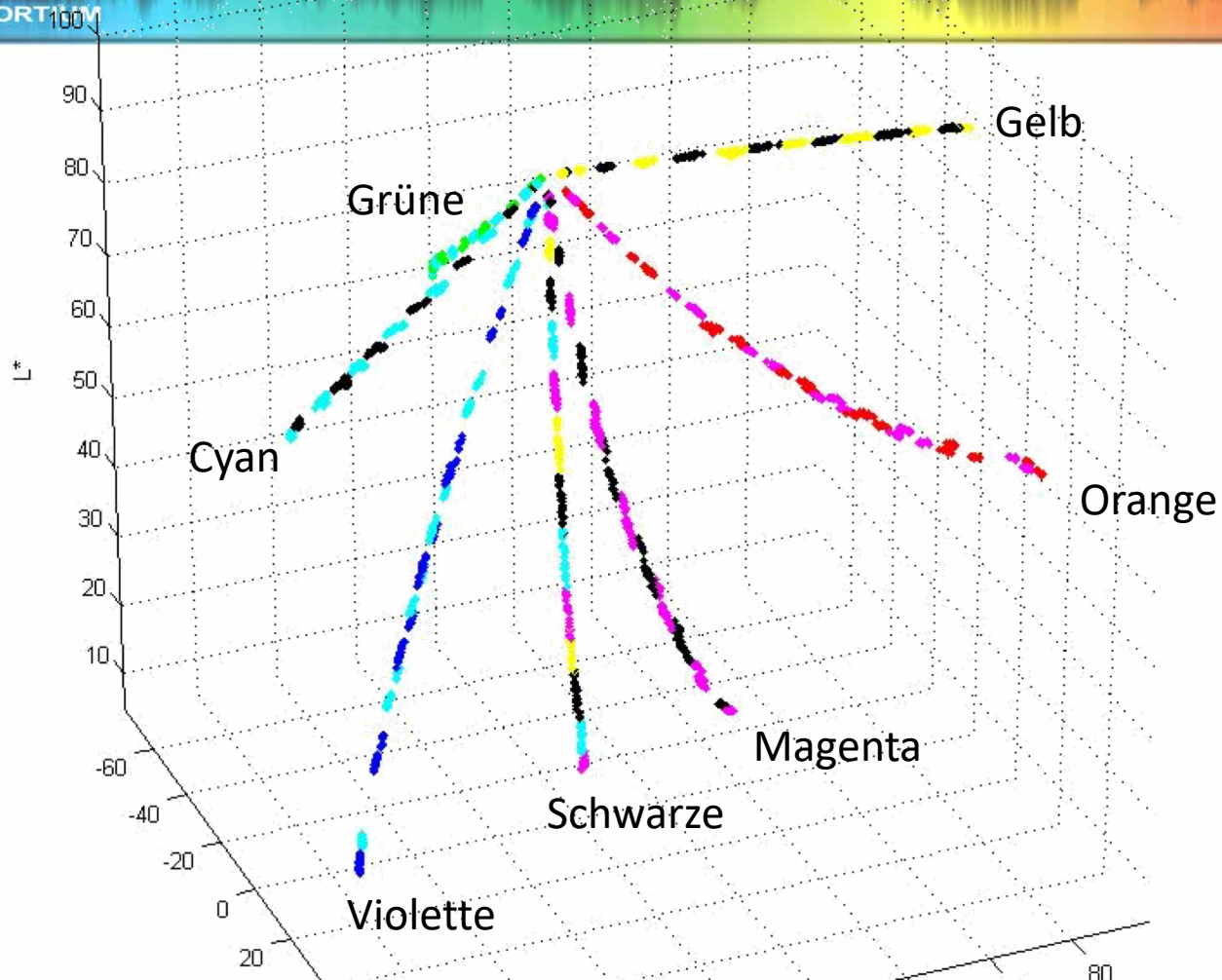
- **Curl of spider**
- **Ink loading**
- **Alignment (not as major an issue for inkjet)**
- **Screening**





Characterization







Screening

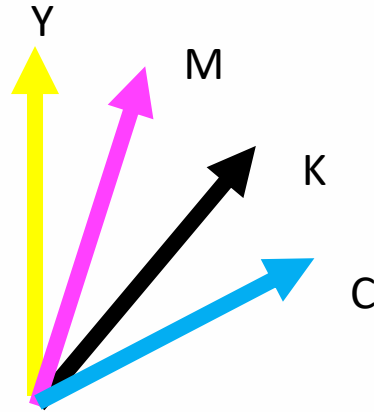




Screening: KCMY

4 colors (KCMY):

- C = 15° / 75°
- M = 75° / 15°
- K = 45°
- Y = 0°





Screening: KCMY

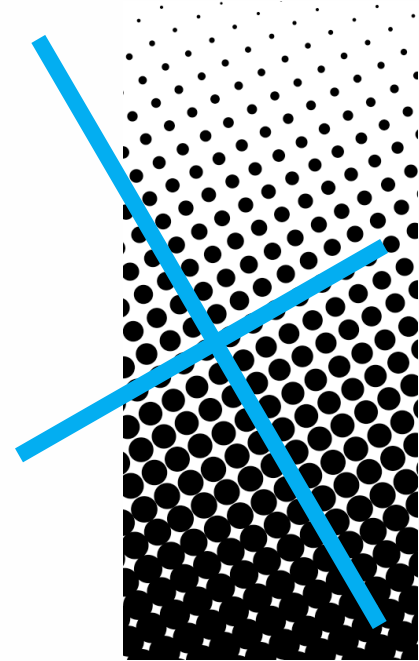
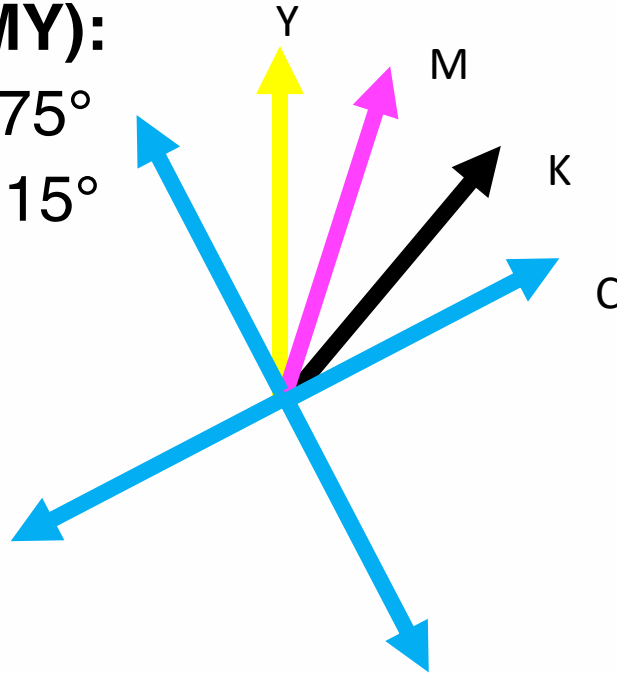
4 colors (KCMY):

— C = $15^\circ / 75^\circ$

— M = $75^\circ / 15^\circ$

— K = 45°

— Y = 0°

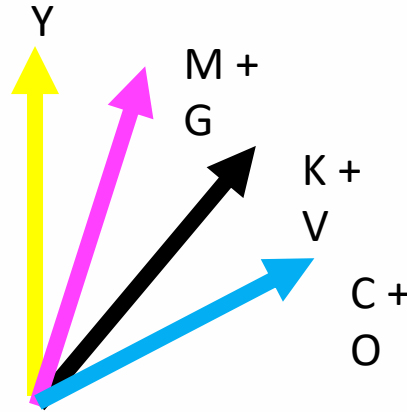




Screening: KCMYOGV

7 colors KCMYOGV:

- C = O = $15^\circ / 75^\circ$
- M = G = $75^\circ / 15^\circ$
- K = V = 45°
- Y = 0°



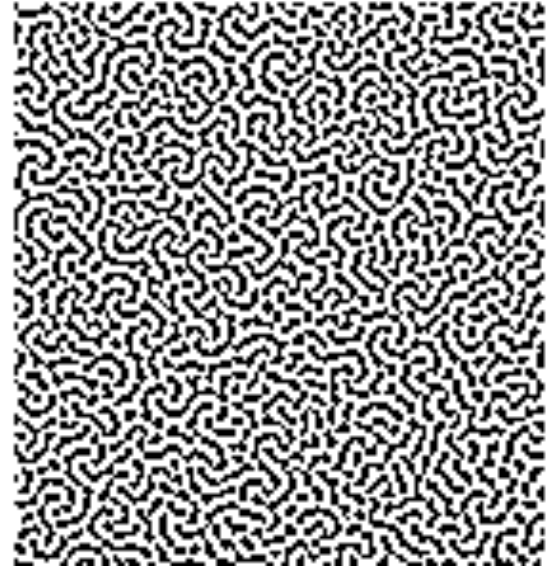


Screening: KCMYOGV via FM

Different screen per color.

**No frequency correlation
between screens!**

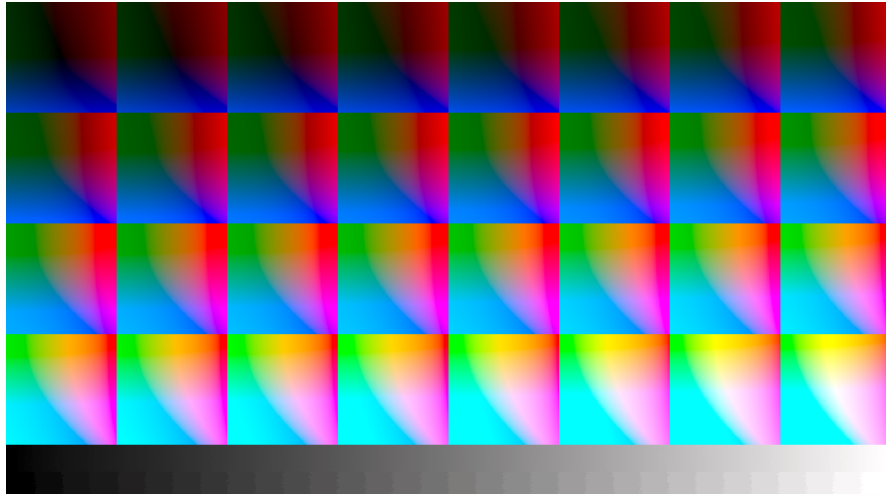
No moiré!

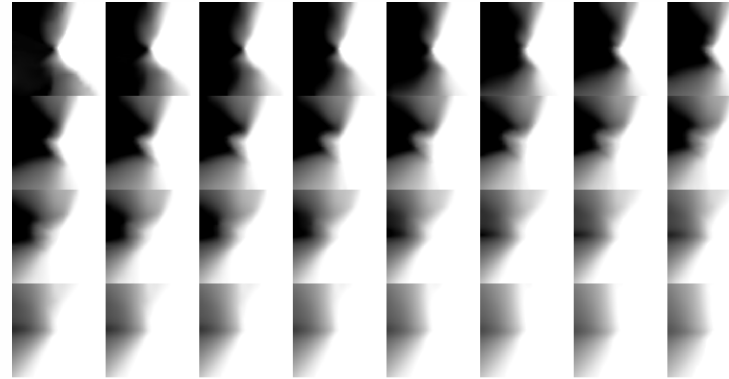
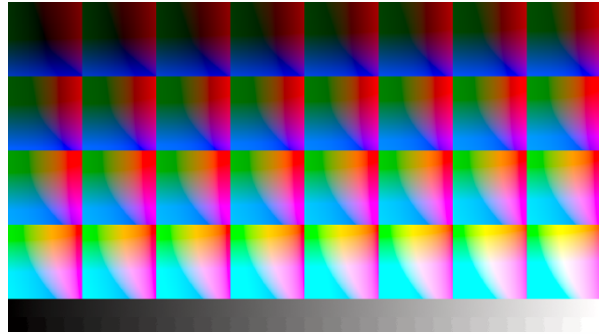




Challenge #3: Colour Separation

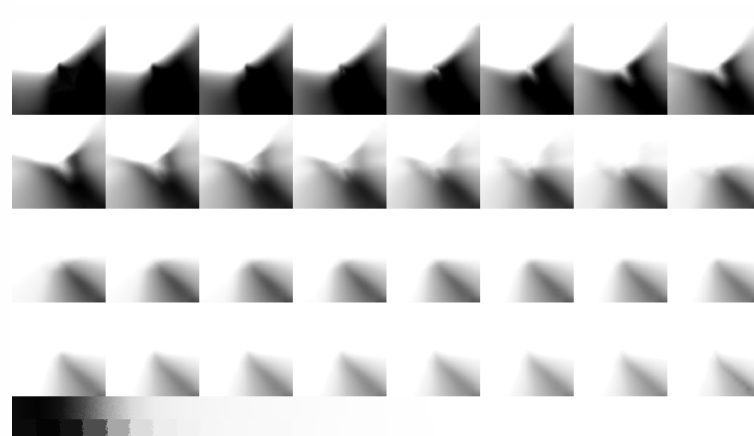
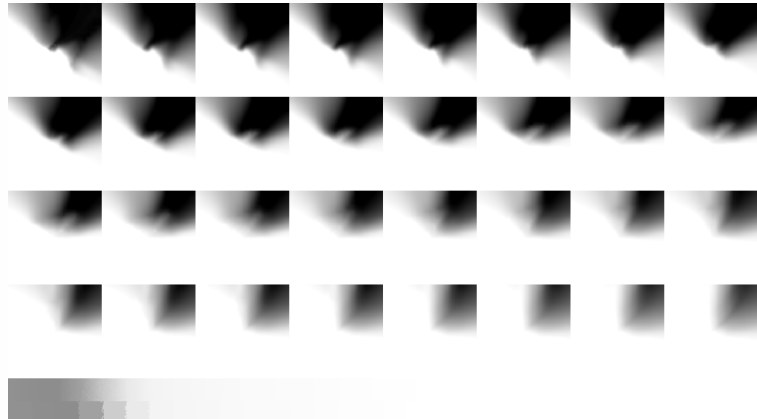
Obtain smoothness





Grüne

Orange



Violette





Challenge #4: Calibration Measurement

Linear SCTV target curve creates equal distribution of tones

- 50% appearance (Lab value) is half way between paper and solid
- Tone steps are equidistant across entire range
- Open smooth shadows and highlights

Uncorrected press run



SCTV 50 is equidistant between paper and solid

Corrected by SCTV



MD compresses shadows

Traditional EDA correction
using Murray-Davies





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Thank you!

