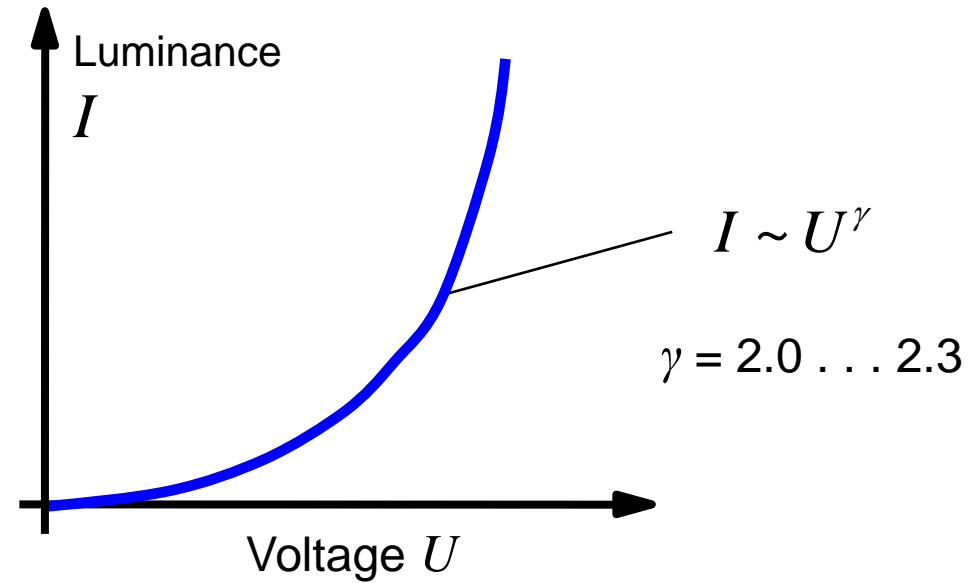


Gamma characteristic

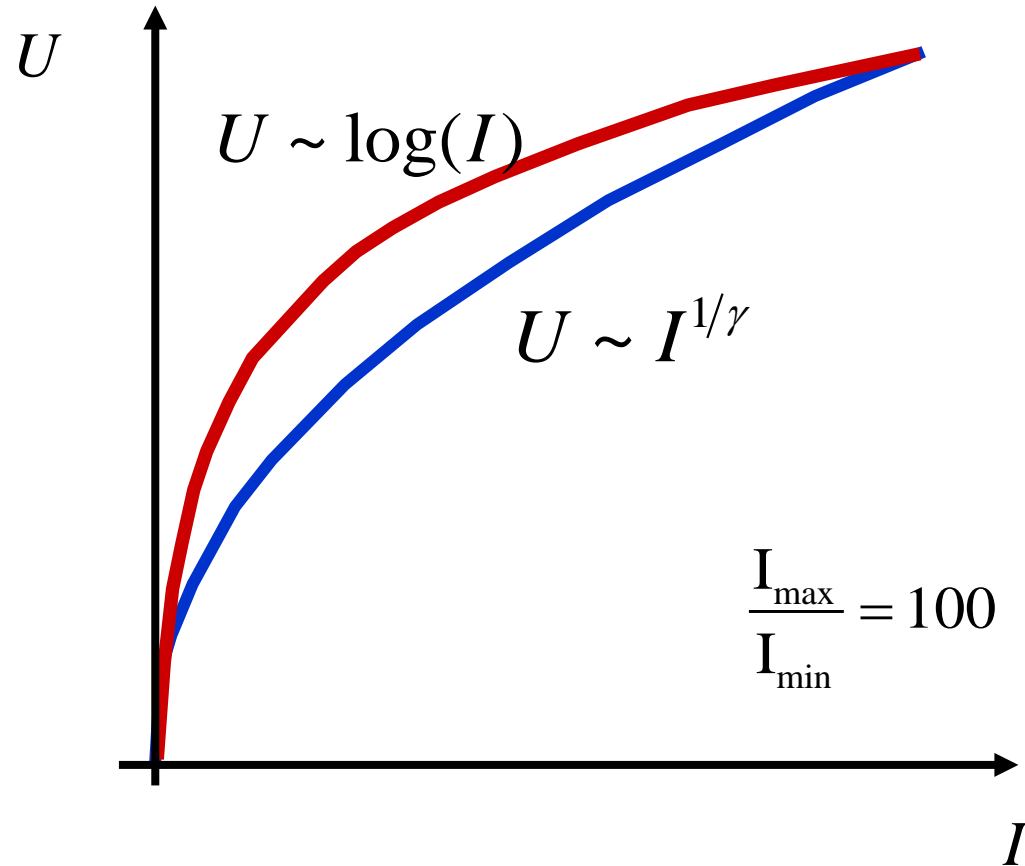
- Cathode ray tubes (CRTs) are nonlinear



- Cameras contain γ -predistortion circuit

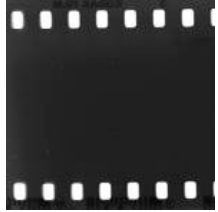
$$U \sim I^{1/\gamma}$$

log vs. γ -predistortion



- Weber's Law suggests uniform perception in the $\log(I)$ domain
- Similar enough for most practical applications

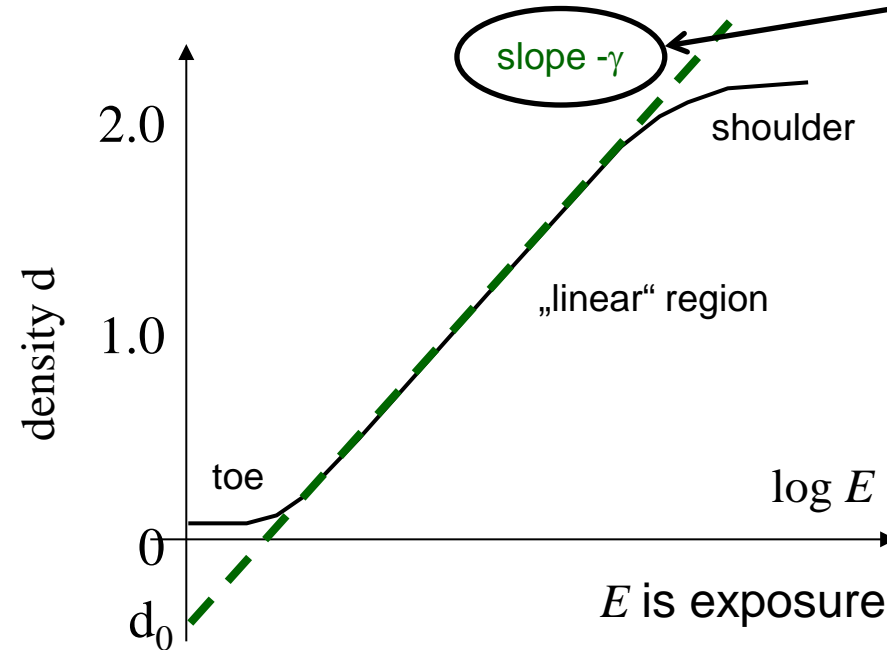
Photographic film



Luminance

$$\begin{aligned} I &= I_0 \cdot 10^{-d} \\ &= I_0 \cdot 10^{-(-\gamma \log E + d_0)} \\ &= I_0 \cdot 10^{-d_0} \cdot E^\gamma \end{aligned}$$

Hurter & Driffeld curve (H&D curve)
for photographic negative



γ measures film contrast

- General purpose films
 $\gamma = -0.7 \dots -1.0$
- High-contrast films
 $\gamma = -1.5 \dots -10$
- Lower speed films tend to have higher absolute γ