COLOR AND SENSORS 11

CS184: COMPUTER GRAPHICS AND IMAGING

April, 2022

1 Colors

1. What is a metamer? Why are metamers useful?

2. What are some common problems associated with defining a color space?

3. What is the purpose of the CIE chromaticity diagram and how is it read? Why is black not on this diagram?

4. What is the goal of the CIELAB color space?

2 Sensors

1. What is ISO, or gain, and how is it related to exposure?

2. What is signal-to-noise ratio (SNR), and how is it mathematically defined?

3. If we assume that photons arrive on the image sensor according to a Poisson distribution, then SNR scales with the square root of the number of photons. This means that as I acquire more photons, the overall noise in my image will decrease (which should match our intuition). If I want increase my SNR by a factor of 2, how should I change the size of my aperture?