

# Image Physics Introduction Review

## Problem

If my camera measures a red channel value of 200 when observing a small patch of surface in the scene, what factors determine that value?

### ANSWER:

There are many factors, not all of which were discussed in the lecture: the colour distribution and intensity of the illumination that falls on the patch, the orientation of the patch relative to the light source and camera, how much light is reflected by the patch at each frequency, what frequencies are combined (and with what weighting) to compute the red channel value, the function that transforms an electrical signal (e.g. voltage or charge)

into a number, and the gain and offset that maps that first number into the number that is stored. Additional complications are that the medium (eg. air) and lenses also absorb and distort light differently at each frequency.