Abstract

The purpose of this project was to characterize several cameras using original software. Specifically, we wanted to extract the gain, read noise, and quantum efficiency for each of the cameras. The cameras involved were the Basler ac1640 – 750um. First, software was written from scratch for each of the cameras to take a sample set of data and get the read noise and gain from that. To do this, we first wrote software for grabbing images, grabbed 1000 images, and ran a data analysis program on them to obtain gain and read noise. Next, a board was set up to measure the quantum efficiency. This was done through analyzing data from a light source and a photodiode amplifier for a variety of wavelengths. Finally, this was repeated for each image detector. The gain of the Basler camera ended up being 36.1495, and the read noise was 6.38588. In conclusion, . These findings will be useful in categorizing each of the cameras and seeing which ones would be useful in an optical setting in our lab.