

PHYS3710 Short experimental projects I  
Physics Department  
The Chinese University of Hong Kong

Topic: Charge coupled devices (CCD) and application in optics

Topics you should know of:

1. Basic structure and parameters of a digital CCD camera, noise in CCD, signal conditioning in CCD
2. Geometric and Gaussian optics

Objective:

1. Characterize a digital CCD camera: noise, linearity, gain, fractional variations in the QE of the pixels, etc
2. Measure the diffraction limit of a single lens and a doublet lens with a standard target
3. Verify Gaussian beam propagation relation

Check-list for the project:

1. A Monochromatic CCD camera
2. A single lens and doublet lens with both  $f = 10$  cm
3. The 1951 USAF Resolution Test Targets
4. 632 nm laser

References: