



## CHARACTERIZATION OF PHOTODETECTORS USING A MONOCHROMATOR AND A BROADBAND LIGHT SOURCE IN THE XYZ COLOR SPACE

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*Abstract- Photodetectors are sensors, which respond to the electromagnetic radiation of the spectrum. Their spectral response depends on many factors of the manufacturing process, e.g. the type of diode that is used or, in some cases, the optical elements that are added to limit the response band. In this paper, we propose an experimental methodology to obtain the spectral response of a photodetector by constructing the characteristic curve using the monochromatic response. For this purpose, we use a broadband source as input of the mono-chromator to vary the wavelength each five nm. The characteristic curves of one commercial color sensor were obtained (including the loss) using the output ratio of the monochromator. Via the numerical expression of the response curve, it is possible to model the actual response of the photodetectors to known or simulated spectra of electromagnetic radiation, and thus to generalize photometric measurements. Previously we have demonstrated the importance of obtaining such measurements to study light sources. Finally, this newly developed method helps studying the behavior of a photodetector in detail; hence, it enables the derivation of photometric measurements from known data or simulations.*

**Index terms:** Photodetector, mono-chromator, broadband light sources, XYZ color space, RGB sensors.