

# section5\_Ex.9

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## 9. What are three classes of detectors?

Distinguish between the photoelectric effect as it occurs in a photomultiplier tube and the creation of electron-hole pairs in a photoconductor

- Photon detectors

- individual photons release one or more electrons (or other charge carriers) on interacting with the detector material;
- used from G-ray to far-IR

- Thermal detectors

- the photon energy goes into heat within the material.
- resulting in a change to a measurable property of the device, such as its electric conductivity
- often used for IR and sub-millimeter detection

- Coherent detectors

- the electric field of the wave is sensed directly, and phase information can be preserved.
- used from far-IR to radio