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SPAD- The World's Cheapest Single Photon Detector JONATHAN REICHERT, None — Chances are you already have several of the world's cheapest single photon detectors in your parts junk drawer. For those "in-the-know," these are called Single Photon Avalanche Diodes (SPADs), but most of us know them as LEDs. It turns out, if you reverse bias some LEDs with about 25 volts DC, they exhibit avalanche breakdown when a visible photon strikes the sensitive area of the p-n junction. Studying this breakdown phenomenon to confirm that it is a single photon event, and that it obeys the Poissonian statistics for some experimental parameters and not for others, is an important exercise for students. One only needs an LED, an operational amplifier, associated power supplies, oscilloscope, pulse counter, and a computer in order to study these pulses. These may be the world's cheapest single photon detectors, but they are also probably the world's most inefficient!

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