

**Worksheet # 2**

(Friday, September 29, 2023)

**Name**

**Questions (5 pts):**

Light with electric field  $\mathbf{E}$  is polarized at an angle  $\theta$  with respect to x-axis, and it is incident on a polarizer set to transmit only x-polarized light to a detector that measures light intensity.

- (a) How does the intensity the detector measure depend on  $\theta$ ?
- (b) Now you reduce the incoming light intensity until your light beam is a stream of single photons. What does the detector detect ? How does the detection depend on  $\theta$  ?