Classical and Quantum Optics

Assignment-2 Answers

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Problem 1

The python code to solve this question is given here.

To create the upper confidence limit, we use the formula,

$$P(x < x_1|\mu) = 1 - \alpha \tag{1}$$

and for central interval, we use

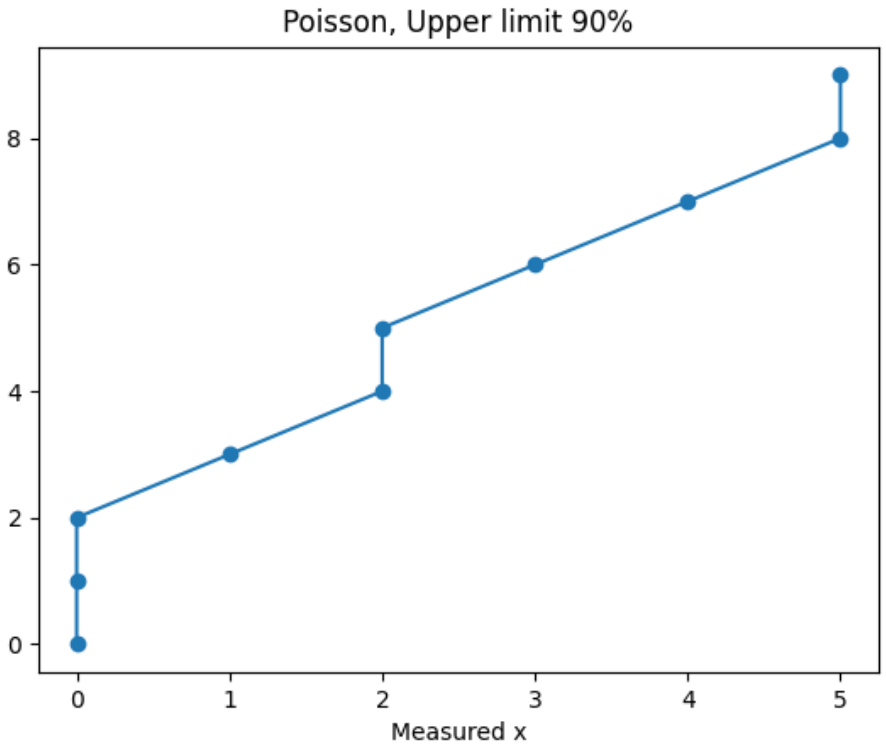
$$P(x < x_1|mu) = P(x > x_2) = \frac{(1-\alpha)}{2} \tag{2}$$

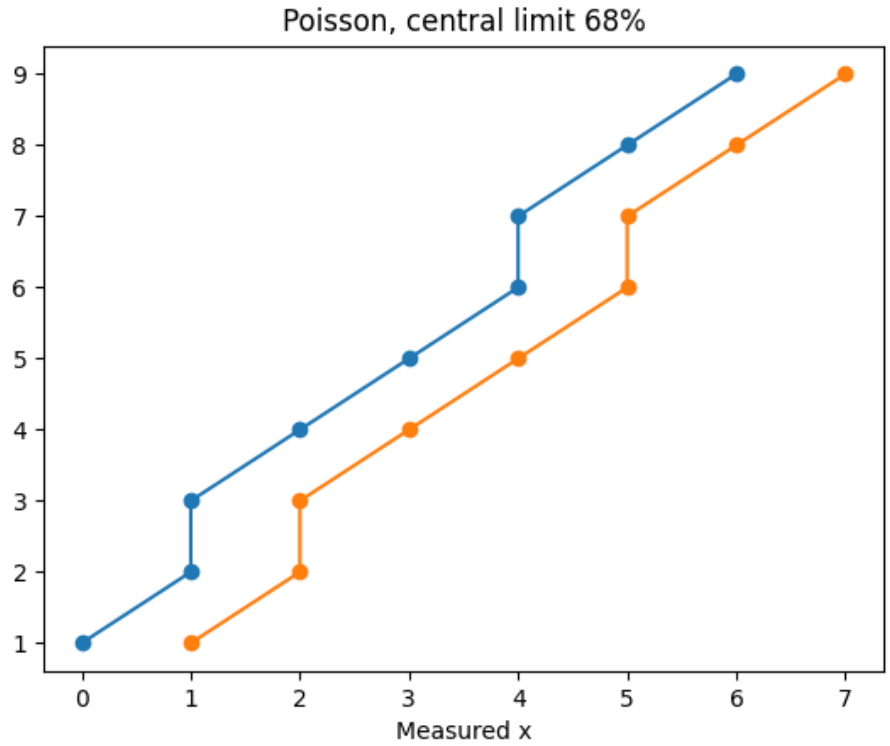
We will take the central interval 68% and upper limit 90%.

(a) Poisson Discrete random variable.

$$P(x|\mu) = \frac{\mu^x}{x!}e^{-\mu} \tag{3}$$

The plots are shown below.




Poisson, central limit 68%
9
8
7
6
5
4
3
2
1
0
1
2
3
4
5
6
7
Measured x