

EXTENSION #1

Bi183 HW #5

1a) $P(b, \lambda_{on}, \lambda_{off}, w_{on}) = w_{on} \text{Poi}(b, \lambda_{on}) + (1 - w_{on}) \text{Poi}(b, \lambda_{off})$

b) $\log L(10, 2, w_{on}) = \sum_i \log P(b, 20, 2, w_{on})$
 $= \sum_i \log [w_{on} \text{Poi}(b, 20) + (1 - w_{on}) \text{Poi}(b, 2)]$

c), d) in notebook.

2a), b) in notebook.

c) $\varepsilon = |\hat{\lambda} - \lambda| > \sqrt{\frac{\lambda}{n}}$

~~$\frac{\varepsilon}{\lambda} > \sqrt{\frac{\lambda}{n}}$~~

~~$\varepsilon > \sqrt{\frac{\lambda}{n}}$~~

~~$\varepsilon > \frac{1}{\sqrt{n}}$~~

$$\frac{\varepsilon}{\lambda} = \frac{|\hat{\lambda} - \lambda|}{\lambda} > \sqrt{\frac{1}{\lambda n}}$$

if $\varepsilon = 0.1; \lambda = 10$

$$\frac{0.1}{10} > \sqrt{\frac{1}{10n}}$$

$$0.01 > \sqrt{\frac{1}{10n}}$$

$$0.0001 > \frac{1}{10n}$$

~~notebook~~ $n > 1000$

3. All in jupyter notebook.

4a) in notebook

b) ~~HSP90AB1~~, see notebook.

c) see notebook