Review Poisson Point Process

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1. History

The first literature on the poisson point process dates back to 1958[1].

2. Poisson Point Process

A process $N(t)$ is called inhomogenous poisson process if:

$$\begin{aligned} N(0) &= 0 \\ N(t) - N(s) &\sim \text{Poisson}\left(\int_s^t \lambda(u)\, \mathrm{d}u \right) \text{ for } \forall 0 \leq s < t \end{aligned} \tag{1}$$

2.1. Likelihood

Observing events at times $\{t_1, t_2, ..., t_n\}$ in a time inteveral $[0, T]$ is:

$$L(\lambda(t)) = \exp\left(- \int_0^T \lambda(t)\, \mathrm{d}t \right) \prod_{i=1}^{n} \lambda(t_i) \tag{2}$$

Bibliography

[1] L. Mandel, "Fluctuations of Photon Beams and their Correlations," *Proceedings of the Physical Society*, vol. 72, no. 6, pp. 1037–1048, Dec. 1958, doi: 10.1088/0370-1328/72/6/312.