

Lecture on July 26th, 2018
Continuous Time Markov Process

1 Spatial Poisson Process (See Chap 5.5)

- For $B \subset A$, $\mathbb{P}(N(B) = 1 | N(A) = 1) = \frac{|B|}{|A|}$.
- For a partition of A , A_1, A_2, \dots, A_m , Conditioned on $N(A) = n$, the n points distributed in A_1, A_2, \dots, A_m follows multinomial distribution.

2 Pure Birth Process (See Chap 6.1)

- Definition of Poisson process in terms of continuous time Markov process.
- Definition of pure birth process in terms of continuous time Markov process.
- The differential equations $P_n(t) = \mathbb{P}(X(t) = n | X(0) = 0)$ satisfies.
- Sojourn time and birth time for pure birth process.
- Example: Yule process.