

Exponential random variable
with parameter λ :

$$\text{cdf } F(a) = \begin{cases} 1 - e^{-\lambda a} & \text{if } a \geq 0 \\ 0 & \text{if } a < 0 \end{cases}$$

expected value = $1/\lambda$

Erlang random variable
with parameter λ and n phases:

$$\text{cdf } F(a) = \begin{cases} 1 - \sum_{j=0}^{n-1} \frac{e^{-\lambda a} (\lambda a)^j}{j!} & \text{if } a \geq 0 \\ 0 & \text{if } a < 0 \end{cases}$$

expected value = n/λ

Poisson random variable
with parameter λt :

$$\text{pmf } p(n) = \frac{e^{-\lambda t} (\lambda t)^n}{n!} \text{ for } n = 0, 1, 2, \dots$$

expected value = λt