

Distribution of the **residual time** before the event occurs when X models time: $P(X > x + s | X > s)$ for $x, s > 0$.

If we think of the exponential random variable as the time to an event, then knowledge that we have waited time s for the event tells us nothing about how much longer we will have to wait - the process has no memory.

Link with Poisson Distribution: If events in a random process occur according to a Poisson distribution with rate λ then the time between consecutive events has an exponential distribution with parameter λ .