Continuous distributions

Normal distribution

$$f(x) = \frac{1}{\sigma\sqrt{2\pi}} e^{-\frac{-(x-\mu)^2}{2\sigma^2}}$$

Exponential distribution

$f(x) = \lambda e^{-\lambda x}$ for x>0, λ>0

=0 otherwise

Chi-square distribution

The probability density function for the χ^2 distribution with r degrees of freedom is given by

$$P_r(x) = \frac{x^{r/2-1}\ e^{-x/2}}{\Gamma\left(\frac{1}{2}r\right) 2^{r/2}}$$

Rayleigh distribution

The distribution with probability density function is given by

$$\frac{r\, e^{-r^2/(2 s^2)}}{s^2}$$

Uniform distribution

$f(x) = \frac{1}{(b-a)}$ for a<x<b

= 0 otherwise

Nakagami distribution

For any $b > 0$ and $m > 0$,

$$f_X(x) = \frac{2m^m}{\Gamma(m)b^m} x^{2m-1} \exp\left(-\frac{m}{b}x^2\right), \quad x \geq 0.$$

$$F_X(x) = \begin{cases} 0 & x < 0 \\ \dfrac{\gamma\left(m, \frac{m}{b}x^2\right)}{\Gamma(m)} & x \geq 0 \end{cases}.$$

$$\mu_X = \frac{\Gamma(m + 1/2)}{\Gamma(m)} \sqrt{\frac{b}{m}}, \quad \sigma_X^2 = b - \mu_X^2.$$