MOD300 Anvendt Python programmering og modellering

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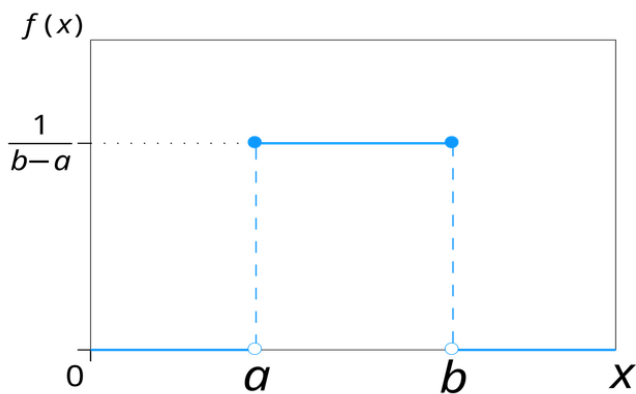06.10.2025

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Recaps

INFERENCE Probability distributions are a description of uncertainty (lack of knowledge).

DESCRIPTORS Probability distribution as description of a not-deterministic state (electrons moving).
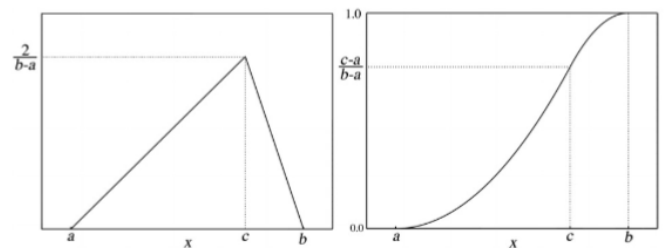
Uniform distribution function
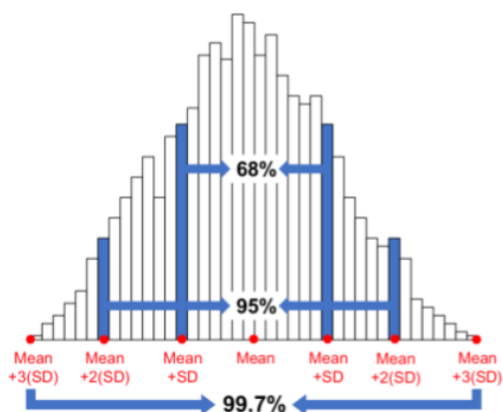
PDF: $f(x) =$

$\frac{1}{b-a}, a \leq x \leq b$

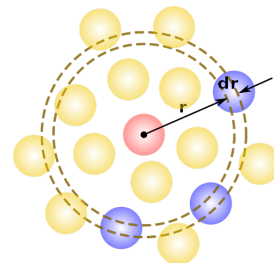## Triangular distribution function

Notation: $X \sim T(a, b, c)$
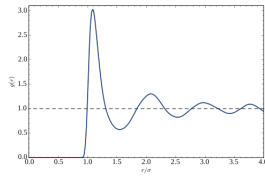

Normal Distribution

Notation: $X \sim G(\mu, \sigma)$
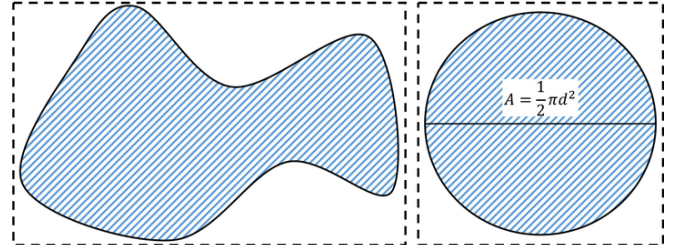

Radial distribution function

$$g(r) = \frac{dn_r}{4\pi r^2 \, dr \rho}$$
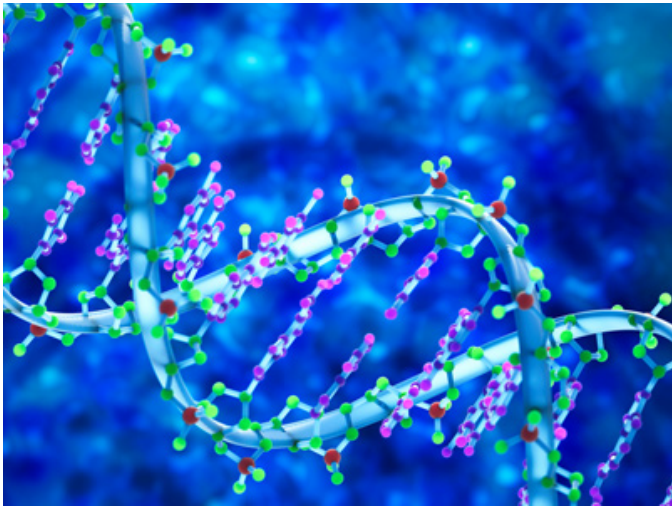
Radial distribution function

$$g(r) = \frac{dn_r}{4\pi r^2 dr\rho}$$

2D distributions

$$A = \frac{1}{2}\pi d^2$$

3D distributions

Random Numbers

HRNG: Hardware random number generator
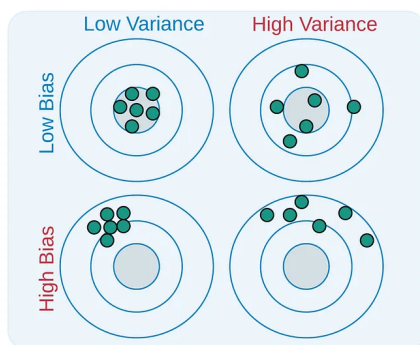
PRNG: Pseudo Random number generator

Make your random number!

MC method

Monte Carlo Integration "Hit and Miss"

Try and then count.

Bias and Variance?

MC integration

$$\int_a^b f(x)dx = \frac{b-a}{4}$$

$$\int_a^b f(x)dx =$$