MOD300 Anvendt Python programmering og modellering

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Recaps

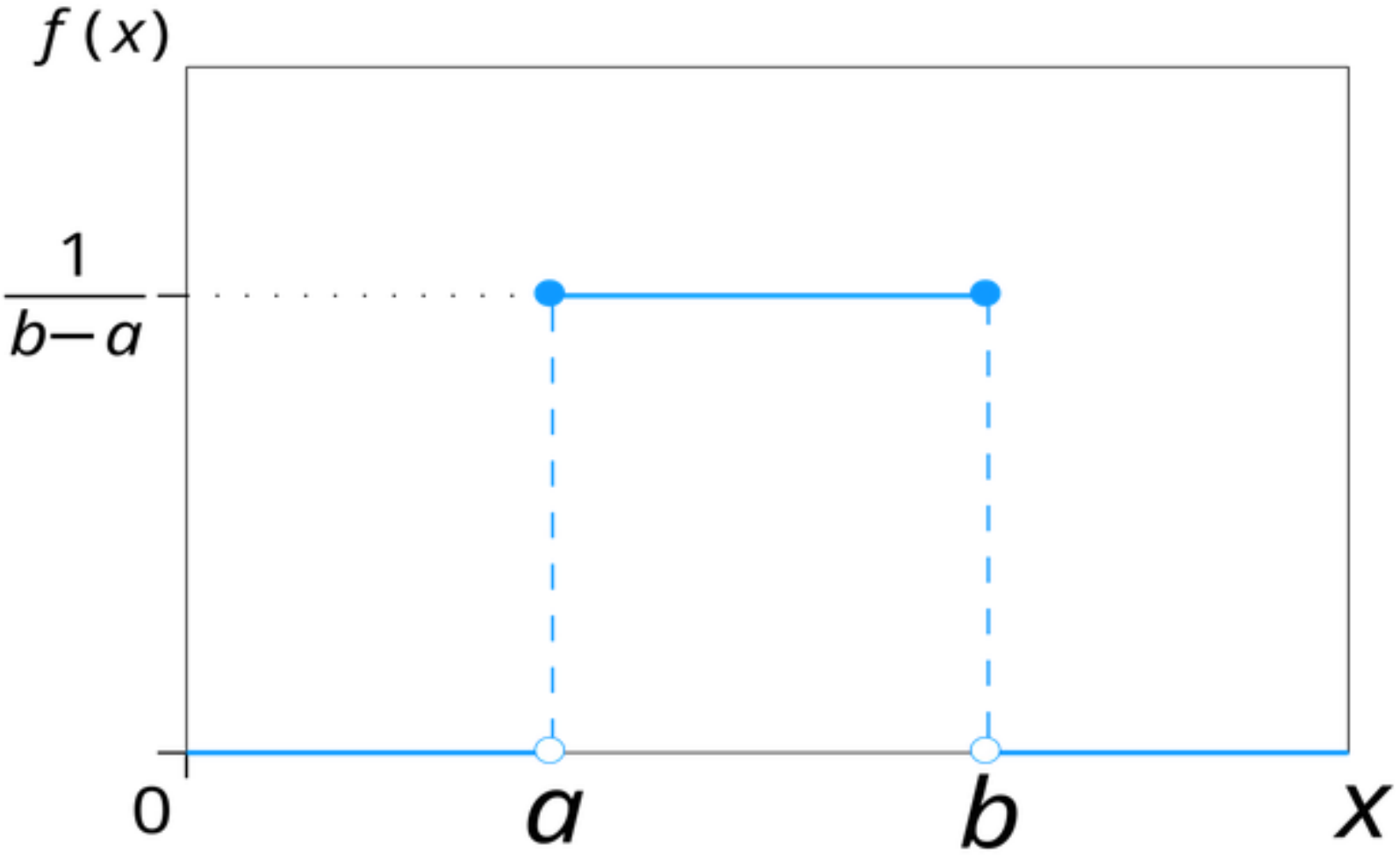
INFERENCE Probability distributions are a description of uncertainty (lack of knowledge).

DESCRIPTORS Probability distribution as description of a not-deterministic state (electrons moving).

Uniform distribution function

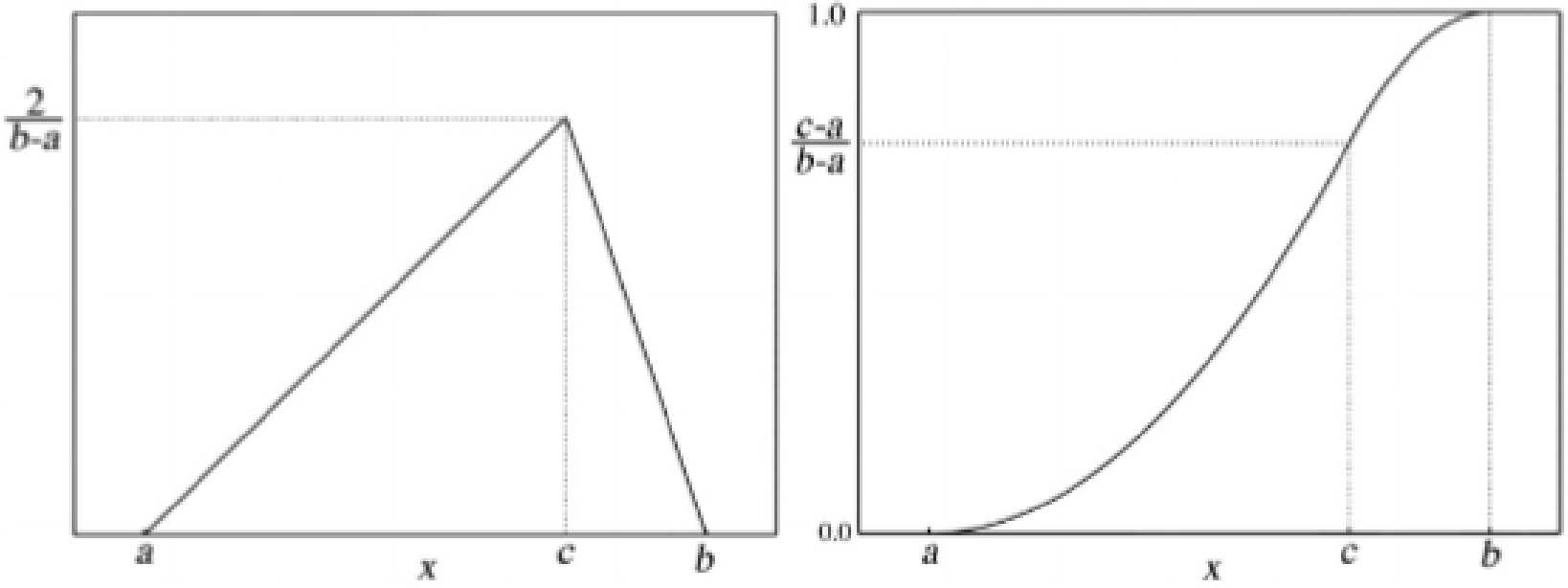
PDF: $f(x) =$

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



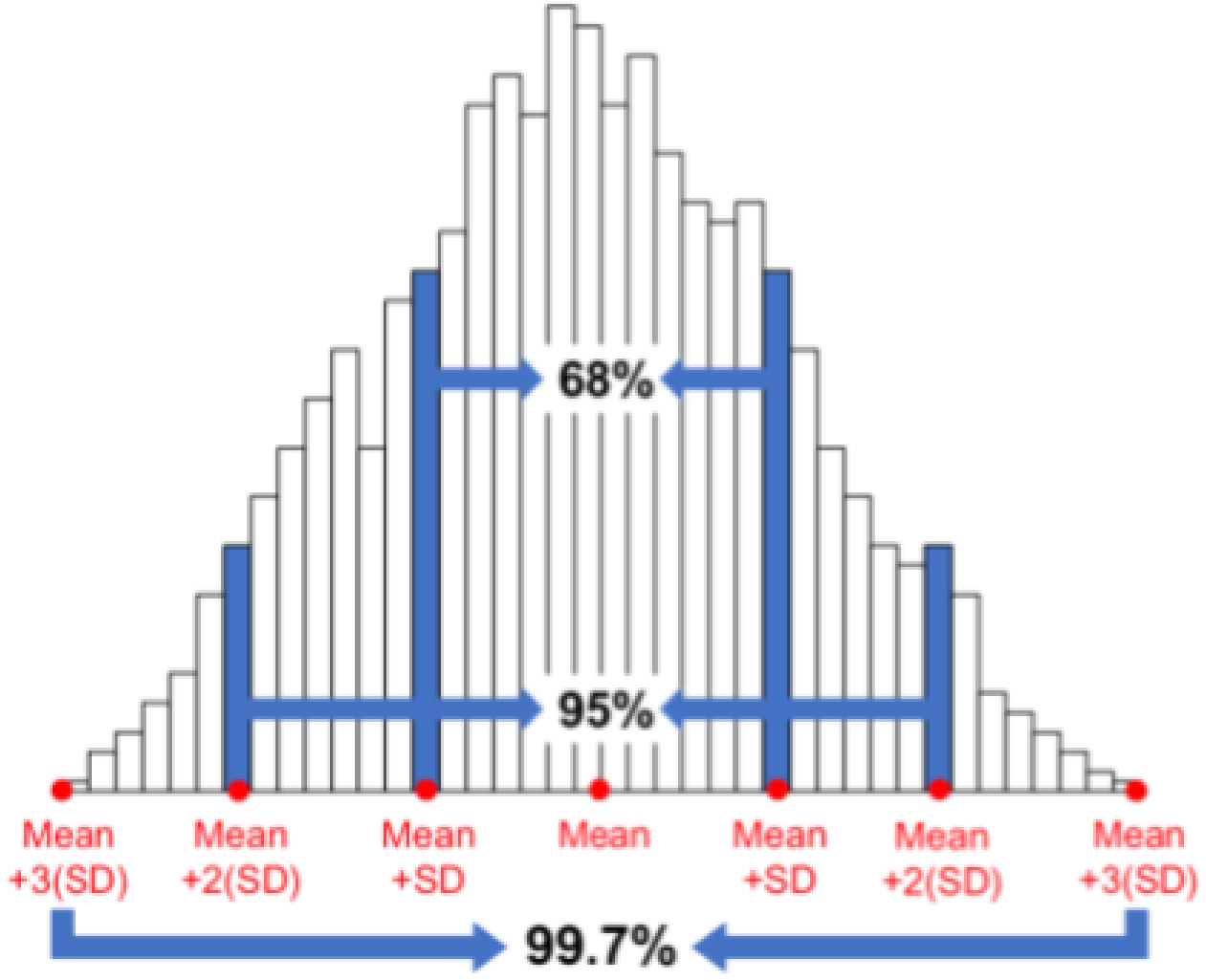
Triangular distribution function

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

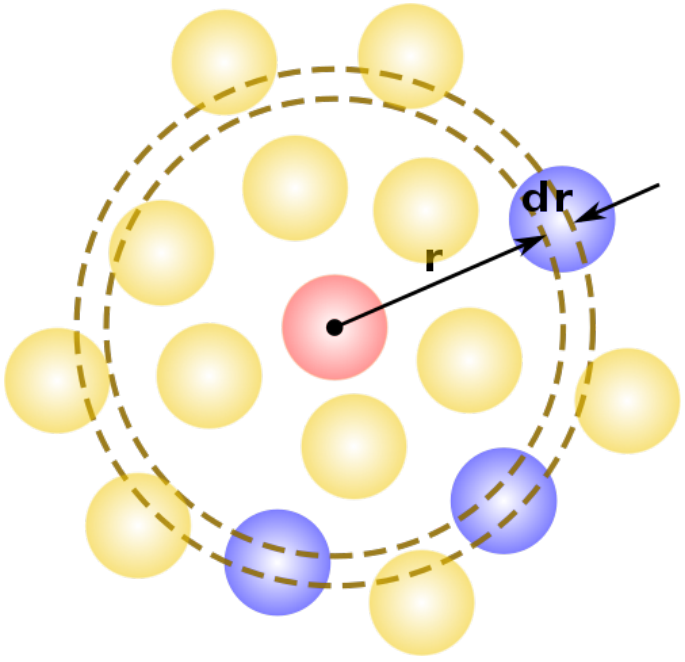


Normal Distribution

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



Radial distribution function



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

Radial distribution function

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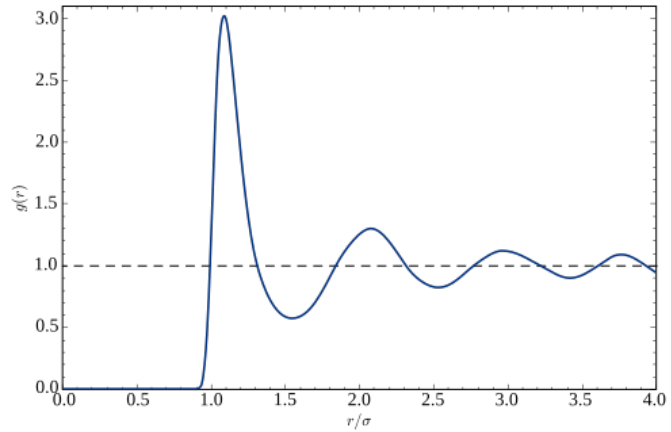
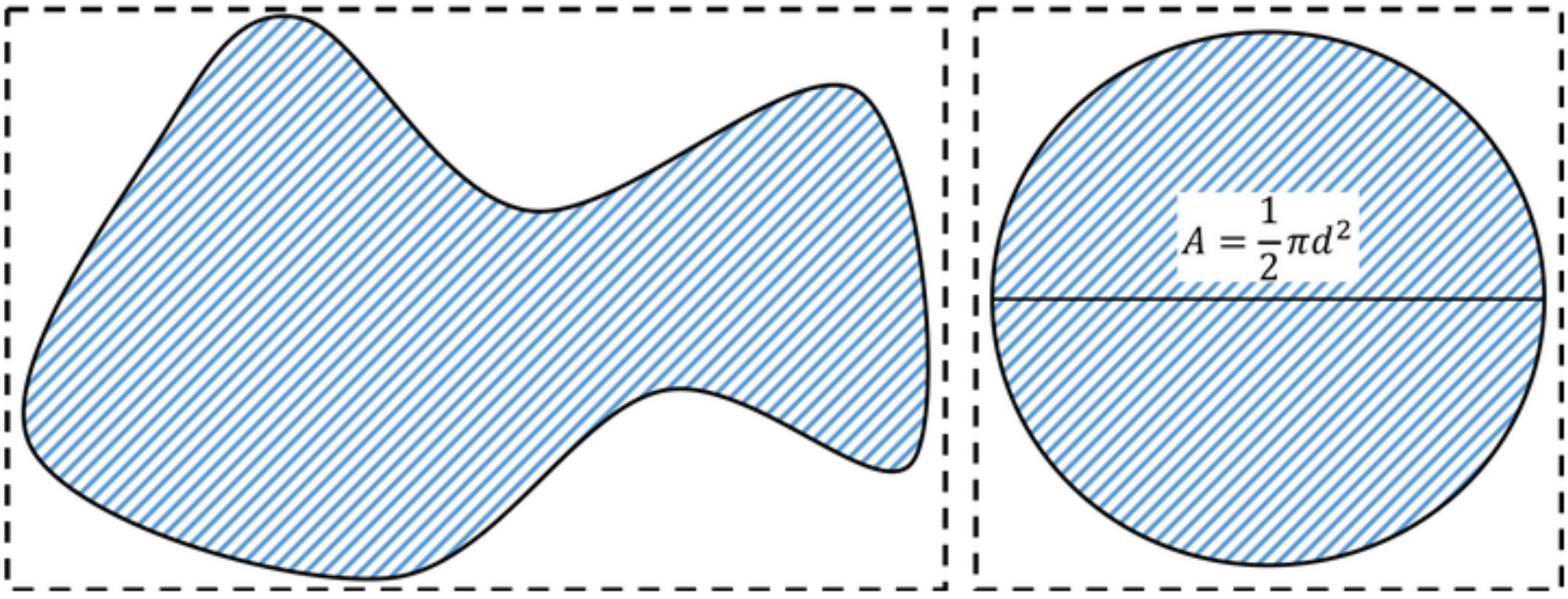
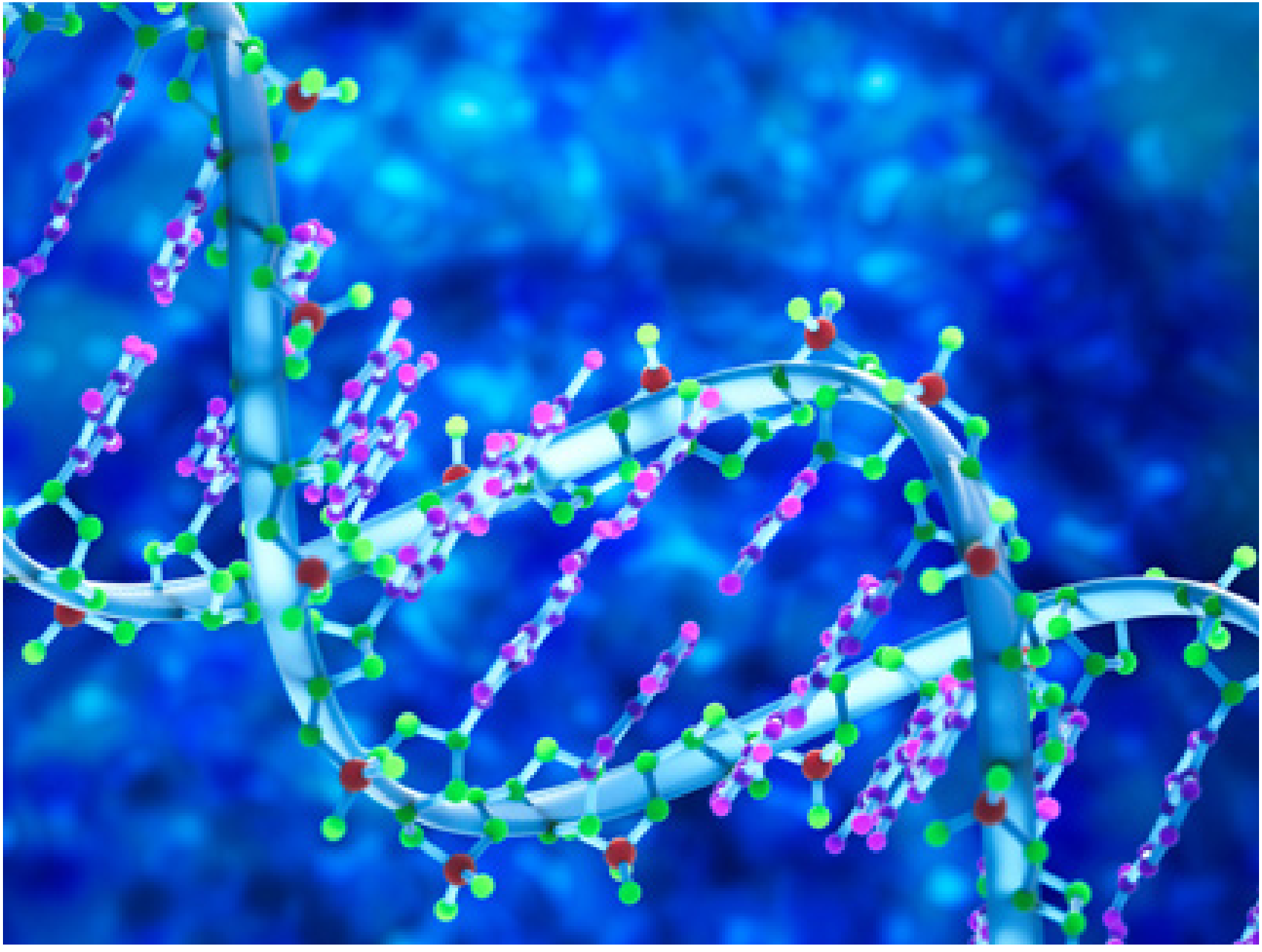


2D distributions



3D distributions



Random Numbers

HRNG: Hardware random number generator

PRNG: Pseudo Random number generator

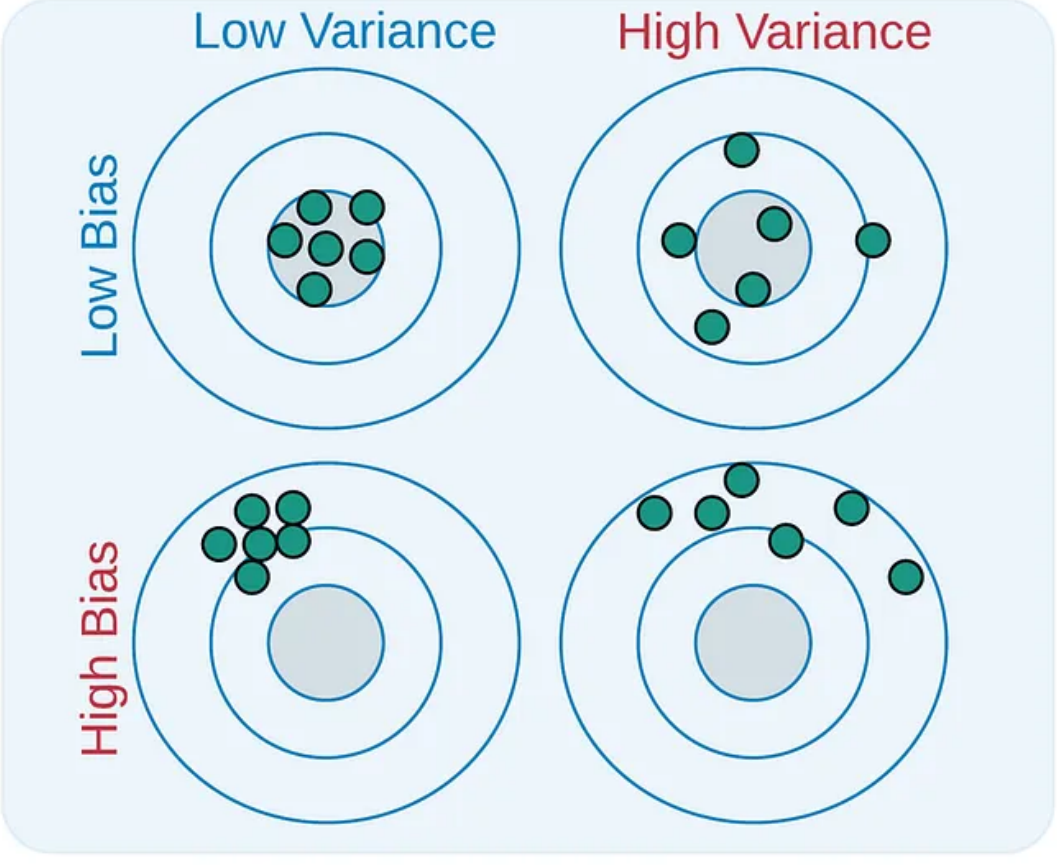
Make your random number!

MC method

Monte Carlo Integration "Hit and Miss"

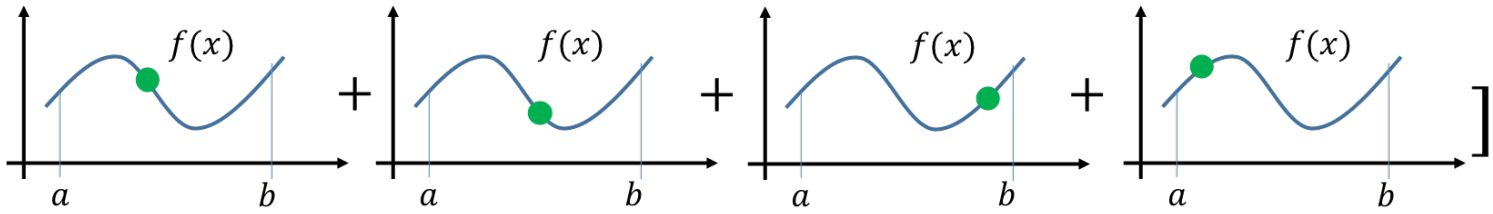
Try and then count.

Bias and Variance?



MC integration

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



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