

ACADEMIC TRAINING.

“Statistical Methods for Data Analysis”
11–14 September 2018 | DESY | Zeuthen

$$\begin{aligned} P(n|q) &= e^{-q} \cdot \frac{q^n}{n!} \\ P(n|q) &= e^{-q} \cdot \frac{q^n}{n!} R = \frac{P(x|\mu)}{R} = \frac{P(x|\mu)}{P(x|\hat{\mu})} \\ P &\equiv \frac{n}{N} \\ \sigma_x^2 &= \frac{1}{n} \sum_{i=1}^n (x_i - \bar{x})^2 = \frac{1}{n} \sum_{i=1}^n (x_i - \langle x \rangle)^2 \\ P(k|p) &= \binom{n}{k} p^k (1-p)^{n-k} \\ \sigma_x^2 &= \frac{1}{n} \sum_{i=1}^n (x_i - \bar{x})^2 = \frac{1}{n} \sum_{i=1}^n (x_i - \langle x \rangle)^2 \\ P(x|\mu, \sigma^2) &= \frac{1}{\sqrt{2\pi\sigma^2}} \exp\left(-\frac{(x-\mu)^2}{2\sigma^2}\right) \\ P(X|\mu, \sigma^2) &= \frac{1}{\sqrt{2\pi\sigma^2}} \exp\left(-\frac{(X-\mu)^2}{2\sigma^2}\right) \end{aligned}$$

Speakers

Dr Ullrich Schwanke and Dr Gerrit Spengler
Institute for Physics | Humboldt University Berlin

Programme

Tuesday, 11 September

10:00–11:45 SR1
Lecture 1 | Gerrit Spengler

Foundations

Probability, distributions,
central limit theorem, parameter estimation, error propagation, multi-dim. distributions and correlations

13:30–15:00 SR1
Tutorial | Discussion

Wednesday, 12 September

10:00–11:45 SR1
Lecture 2 | Ullrich Schwanke

Frequentist vs Bayesian

Does it matter?
Confidence intervals,
Coverage testing

14:00–15:00 SR3
Physics Colloquium

17:00–20:00
Lakefront Barbecue

Thursday, 13 September

10:00–11:45 SR1
Lecture 3 | Ullrich Schwanke

Confidence Intervals

Calculation of confidence intervals, including systematic errors

13:30–15:00 SR1
Tutorial | Discussion

Friday, 14 September

10:00–11:45 SR1
Lecture 4 | Gerrit Spengler

Hypothesis Testing

Confidence intervals,
Statistical testing,
Selected methods

13:30–15:00 SR1
Tutorial | Discussion

Accelerators | Photon Science | Particle Physics

Deutsches Elektronen-Synchrotron
A Research Centre of the Helmholtz Association

