formulario per l'elaborazione di dati sperimentali

$$\overline{X} = \frac{\sum_{i=1,N} x_i}{N} = \frac{\sum_{j=1,M} n_j x_j}{N}$$

$$\sigma_s(X) = \sqrt{\frac{\sum_{i=1,N}(x_i-\overline{X})^2}{N-1}} = \sqrt{\frac{\sum_{j=1,M} n_j(x_j-\overline{X})^2}{N-1}} = \sqrt{\frac{\sum_{i=1,N} x_i^2 - N\overline{X}^2}{N-1}} \qquad \sigma_s(\overline{X}) = \frac{\sigma_s(X)}{\sqrt{N}}$$

$$X_p = \frac{\sum_{i=1,N} \frac{x_i}{\sigma_i^2}}{\sum_{i=1,N}\frac{1}{\sigma_i^2}} \pm \frac{1}{\sqrt{\sum_{i=1,N}\frac{1}{\sigma_i^2}}}$$

medie

$$\Delta = X - m \qquad \Delta = X_1 - X_2$$

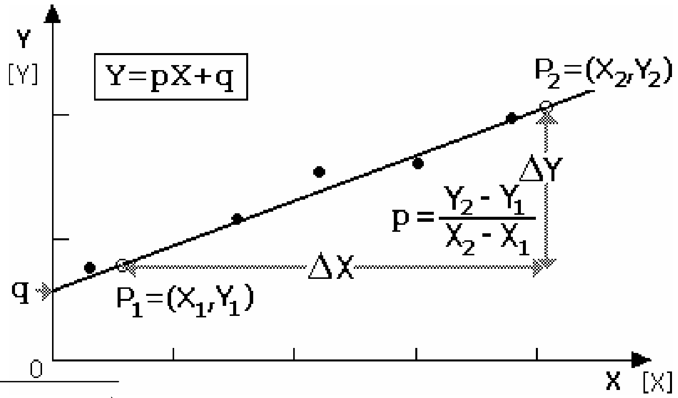
$$s = \frac{X-m}{m} \qquad s = \frac{X_1 - X_2}{\frac{X_1+X_2}{2}}$$

$$t = \frac{X-m}{\sigma} \qquad t = \frac{X_1 - X_2}{\sqrt{\sigma_1^2 + \sigma_2^2}}$$

confronti

$$p = \frac{N\sum x_i y_i - \sum x_i \sum y_i}{N\sum x_i^2 - (\sum x_i)^2}$$

$$q = \frac{\sum x_i^2 \sum y_i - \sum x_i \sum x_i y_i}{N\sum x_i^2 - (\sum x_i)^2}$$



$$\sigma_X = \sqrt{\frac{\sum(x_i - \overline{X})^2}{N}} \qquad \sigma_Y = \sqrt{\frac{\sum(y_i - \overline{Y})^2}{N}}$$

$$\sigma_s(Y) = \sqrt{\frac{\sum[y_i - (p x_i + q)]^2}{N-2}} = \sqrt{\frac{N}{N-2}\left(\sigma_Y^2 - p^2\sigma_X^2\right)}$$

$$\sigma_p = \frac{\sigma_s(Y)}{\sqrt{N}\sigma_X} = \sqrt{\frac{1}{N-2}\left(\frac{\sigma_Y^2}{\sigma_X^2} - p^2\right)} \qquad \sigma_q = \frac{\sigma_s(Y)}{\sqrt{N}\sigma_X}\sqrt{\sigma_X^2 + \overline{X}^2} = \sigma_p\sqrt{\sigma_X^2 + \overline{X}^2}$$

minimi quadrati

$$Y = f(X_1, X_2, \cdots, X_N) \pm \sqrt{\sum_{i=1,N}\left(\left.\frac{\partial f}{\partial X_i}\right|_{X_1,\cdots,X_N}\right)^2 \sigma^2(X_i)} \qquad Y = cX_1^{p_1}X_2^{p_2}\cdots X_N^{p_N} \pm Y\sqrt{\sum_{i=1,N} p_i^2\left(\frac{\sigma(X_i)}{X_i}\right)^2}$$

misure derivate

$T = (13{,}2 \pm 1{,}0) \times 10^3$ s   simbolo - unità di misura - fattore moltiplicativo

2 cifre significative, stesse cifre decimali

notazioni