

Fórmulas de teoria de erros

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A primeira etapa é calcular as seguintes somas:

$$\langle \sigma^2 \rangle = \sum_i \frac{1}{\sigma_i^2} \quad ; \quad \langle x \rangle = \frac{1}{\langle \sigma^2 \rangle} \sum_i \frac{x_i}{\sigma_i^2}$$

$$\langle x^2 \rangle = \frac{1}{\langle \sigma^2 \rangle} \sum_i \frac{x_i^2}{\sigma_i^2} \quad ; \quad \langle y \rangle = \frac{1}{\langle \sigma^2 \rangle} \sum_i \frac{y_i}{\sigma_i^2}$$

$$\langle xy \rangle = \frac{1}{\langle \sigma^2 \rangle} \sum_i \frac{x_i y_i}{\sigma_i^2}$$

Feito isso, usar as seguintes fórmulas:

$$a = \frac{\langle x \rangle \langle y \rangle - \langle xy \rangle}{\langle x \rangle^2 - \langle x^2 \rangle} \quad ; \quad b = \langle y \rangle - a \langle x \rangle$$

$$\Delta a = \sqrt{\frac{1/\langle \sigma^2 \rangle}{\langle x^2 \rangle - \langle x \rangle^2}} \quad ; \quad \Delta b = \sqrt{\frac{\langle x^2 \rangle / \langle \sigma^2 \rangle}{\langle x^2 \rangle - \langle x \rangle^2}}$$