

Ex. av. ~~1~~ 1 ± 1 and 100 ± 10

$$\frac{1}{1} + \frac{100}{100}$$

WAV:

$$N_{av} = \frac{\frac{1}{\sigma_1^2} + \frac{1}{\sigma_2^2}}{\frac{1}{\sigma_1^2} + \frac{1}{\sigma_2^2}} = \frac{1}{\left(\frac{1}{1} + \frac{1}{100}\right)}$$

$$\rightarrow N_{av} = 2 \cdot \frac{100}{101}$$

$$\begin{aligned} \frac{GOF}{\chi^2} &= \frac{(1-1.98)^2}{1^2} + \frac{(100-1.98)^2}{100^2} \\ &= 0.9604 + 96.08 \\ &= 97 \\ &\rightarrow \text{Imath: Prob}(97) = 0. \end{aligned}$$

$$\frac{1}{\sigma^2} = \frac{1}{\frac{1}{\sigma_1^2} + \frac{1}{\sigma_2^2}} = \frac{1}{\frac{100}{101} + \frac{101}{100}}$$

Uncertainty

$$\sigma^2 = \frac{100}{101} \rightarrow \sigma = 0.995$$

$$\begin{aligned} 1.98 \cdot 2 &= 3.96 \approx 4 \\ &= 100 - 96 \\ &= 101 - 97 \end{aligned}$$