Erratum on statistical error calculation

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Gaussian error propagation

Adding correlation terms to the Gaussian error propagation formula

$$\epsilon_{\text{geom}} = \sqrt{Vx * Vp - Cov^2}$$

- General EP is $\Delta\epsilon = \sqrt{\sum_i \left(\frac{\partial \epsilon}{\partial x_i}\sigma_i\right)^2 + \sum\sum_{i\neq j} \frac{\partial \epsilon}{\partial x_i}\frac{\partial \epsilon}{\partial x_j}\sigma_{ij}}$

- This yields in a smaller statistical error, 24.2 % instead of 34.0 % (neglecting correlation)
- **Mistake 1:** I was missing a factor of 2 in the term for the correlation terms
- **Mistake 2:** In Matlab, rms is defined with $1/N$, while the covariance* goes with $1/(N-1)$. I mixed them up

- Considering both things, GEP with correlation terms yields rel. stat error of **0.4 %**
- Since this is textbook case of error propagation, I'll use that

* Sometimes in literature defined with $1/N$, but MATLAB default is $1/(N-1)$

[1] K. O. Arras, *An Introduction To Error Propagation […],* Technical Report http://srl.informatik.uni-freiburg.de/papers/arrasTR98.pdf (visited 2019-04-02)