A definition for an incremental mean can be written

$$\mu_i = \mu_{i-1} + \frac{x_i - \mu_{i-1}}{i}, \quad i \in [1,n], \quad \mu_0 = 0.$$

Can you provide an elegant proof of the following definition for the incremental sum of the squared differences from the mean?

$$\sum_{i=1}^{n} (x_i - \mu_n)^2 = \sum_{i=1}^{n-1} (x_i - \mu_{n-1})^2 + (x_n - \mu_{n-1})^2 \frac{n-1}{n}$$

This algorithm has superior numerical stability compared to the more traditional algorithms, see http://en.wikipedia.org/wiki/Correlation.