Erratum: “Power spectrum and Allan variance methods for calibrating single-molecule video-tracking instruments” [Rev. Sci. Instrum. **83**, 025115 (2012)]

Bob M. Lansdorp¹ and Omar A. Saleh^{2,a)}

¹*Materials Department, University of California Santa Barbara, Santa Barbara, California 93106, USA*

²*Materials Department and Biomolecular Science and Engineering Program, University of California Santa Barbara, Santa Barbara, California 93106, USA*

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In the original paper¹ we made an error in Eq. (18). The equation read

$$\tilde{\sigma}_m^2 = \frac{1}{2(N-2m)(m\tau_c)^2} \sum_{k=1}^{N-2m} (x_{k+2m} - 2x_{k+m} + x_k)^2 \quad (18)$$

but it should be

$$\tilde{\sigma}_m^2 = \frac{1}{2(N-2m+1)(m\tau_s)^2} \sum_{k=1}^{N-2m+1} (z_{k+2m} - 2z_{k+m} + z_k)^2, \quad (18a)$$

with $z_1 = 0$ and for $j = 2, \dots, (N+1)$:

$$z_j = \tau_s \sum_{i=1}^{j-1} x_i. \quad (18b)$$

Here, N is the total number of data points in the original time series, and τ_s is the camera shutter time. We note that the computationally efficient form of the overlapping Allan variance in Eq. (18a), computed by integrating first (Eq. (18b)), yields the same result and can be derived from the more intuitive form:

$$\tilde{\sigma}_m^2 = \frac{1}{2m^2(N-2m+1)} \sum_{j=1}^{N-2m+1} \left\{ \sum_{i=j}^{j+m-1} (x_{i+m} - x_i) \right\}^2. \quad (18c)$$

We used Eq. (18c) for all calculations in the original paper, and our conclusion therefore remains unchanged. We would like to acknowledge group member David Jacobson for bringing this oversight to our attention, and apologize to any readers for the confusion.

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^{a)}Electronic mail: saleh@engineering.ucsb.edu