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Author Correction: 20 years of developments in optical frequency comb technology and applications

Tara Fortier & Esther Baumann

Correction to: *Communications Physics* <https://doi.org/10.1038/s42005-019-0249-y>, published online 6 December 2019.

The original version of this article contained errors in equations, text, figures, and references as listed below. These have now all been corrected in the PDF and HTML version of the article.

In Equation 1. The summand function was incorrectly written as $A_N e^{iN\omega_N t}$. The correct version is $A_N e^{i\omega_N t}$.

In the fifth paragraph of subsection “The comb equation”, the first sentence incorrectly read “More specifically, with knowledge of f_r alone, a single optical mode can only be known to $\pm f_r$ ”. The correct version reads “More specifically, with knowledge of f_r alone, a single optical mode can only be known to $\pm f_r/2$ ”.

In the fourth paragraph of the subsection “Comb referencing, stabilization, and performance”, the first sentence incorrectly read “Fig. 3 shows how the OFC noise performance varies as a function of different referencing schemes.” The correct version reads “Figure 3 provides an intuitive picture of how the OFC noise performance varies as a function of different referencing schemes. “In the fifth sentence of the same paragraph there was an error in the relation among the variables K , N and M . The relevant part of the sentence incorrectly read “...but diverges outside the lock points (for $K < N$ and $K > N$) with a slope...”. The correct version states “... but diverges outside the lock points (for $K < N$ and $K > M$) with a slope...”. Also, in the sixth paragraph of the same subsection, the second sentence incorrectly read “In this scheme, the divided optical signal is detected via the repetition rate, which carries the noise of the optical reference at mode M divided by M^2 , $\delta f_r = S_{\phi, \text{ref}}/M^2$ ”. In the correct version, the equation $\delta f_r = \frac{S_{\phi, \text{ref}}}{M^2}$ has been removed and the sentence correctly reads “In this scheme, the divided optical signal is detected via the repetition rate, which carries the noise of the optical reference at mode M divided by M^2 . The same sixth paragraph also contained an erroneous extra parenthesis in the equation “90 dB ($= 10 \cdot \text{Log}(300 \frac{\text{THz}}{10} \text{GHz})^2$)”. The correct equation is “90 dB = 10 · Log[(300 $\frac{\text{THz}}{10}$ GHz)²]”.

In the sixth paragraph of subsection “Combs for atomic clock comparisons”, the first sentence incorrectly read “These relative clock comparisons are generally reported in the form of frequency ratios, $R = \nu_{\text{opt}2}/\nu_{\text{opt}1}$, which have both practical and fundamental applications to clock comparisons”. In the correct version the equation has been changed and it now reads “These relative clock comparisons are generally reported in the form of frequency ratios, $R_{2,1} = \nu_{\text{opt}2}/\nu_{\text{opt}1}$, which have both practical and fundamental applications to clock comparisons”.

In the first paragraph of the subsection “Distance measurements and laser ranging”, at the end of the third sentence, the inequality between the temperatures incorrectly read “ $T_{\text{resp}} \ll T_p$ ”. The correct inequality is “ $T_p \ll T_{\text{resp}}$ ”. In the fifth sentence the value of T_p was incorrectly written as “ $T_p < 100\text{s}$ ”. This has now been replaced with the correct value which reads “ $T_p < 100 \text{fs}$ ”.

Fig. 5 contained some errors in the notation of the variables: at the top of the figure near the box “comb 1” the erroneous notation in red text “ $T_r + \Delta T_r$ ” has been replaced with the correct version “ T_r ”; the notation T_r near the box “comb 2” has been replaced with the correct version “ $T_r + \Delta T_r$ ”. At the bottom of the figure, the notation associated with the two panels describing “measurement

timescales”, the notation close to the left plots erroneously read “ $\delta T \otimes \delta T$ ”. The correct notation is “ $\sim \delta T$ ”; the notation close to the right hand plot which incorrectly read “ $T_p \otimes T_p$ ” has been removed.

Reference “Reichert, J. et al. Measuring the frequency of light with mode-locked lasers. Optics Communication 172, 59-68 (1999)” was missing from the original article and has now been added as bibliographic reference [22]. All other references have been renumbered accordingly.

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