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CORRECTION
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# Correction to: Non-invasive assessment of plasma parameters inside an ion thruster combining optical emission spectroscopy and principal component analysis

Benny T. Nauschütt[1*], Limei Chen[1], Kristof Holste[1] and Peter J. Klar[1]

The original article can be found online at https://doi.org/10.1140/epjti/s40485-021-00070-x

*Correspondence: Benny.Nauschuett@physik.uni-giessen.de
[1]Institute of Experimental Physics I, Justus Liebig University, Heinrich-Buff-Ring 16, 35392 Giessen, Germany

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In the publication of the article [1], the principle component analysis section contains mixed up indices. The corrected part of the affected section is shown below.

**Corrected**

First, the average spectrum of the entire reference data set $\overline{S_{\mathrm{PCA}}}(\lambda)$ is subtracted from each spectrum $S(\lambda)$. To derive the new coordinates, i.e., the PCA-axes, the covariances $\sigma_{ij}$ of each of the $n$ wavelength positions with every other wavelength position (including itself) are calculated using

$$\sigma_{ij} = \frac{1}{m} \cdot \sum_{k=0}^{m} (x_{ki} - \overline{x_i}) \cdot (x_{kj} - \overline{x_j}) \quad \text{where } \overline{x_i} = \overline{x_j} = 0. \tag{1}$$

Here, $x_{ki}$ and $x_{kj}$ are the values of wavelength positions $i$ and $j$ of the spectrum $k$. Since the average intensities of each wavelength position $\overline{x_i}$ and $\overline{x_j}$ were already subtracted before, they are now zero.

With these covariances the covariance matrix $\mathbf{C}$ is set up

$$\mathbf{C} = \begin{pmatrix} \sigma_{00} & \sigma_{01} & \cdots & \sigma_{0n} \\ \sigma_{10} & \sigma_{11} & \cdots & \sigma_{1n} \\ \vdots & \vdots & \ddots & \vdots \\ \sigma_{n0} & \sigma_{n1} & \cdots & \sigma_{nn} \end{pmatrix}. \tag{2}$$

All the changes that were requested are implemented in this correction and the original article [1] has been corrected.

## Publisher's Note



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### References

1. Nauschütt BT, Chen L, Holste K, Klar PJ. Non-invasive assessment of plasma parameters inside an ion thruster combining optical emission spectroscopy and principal component analysis. EPJ Tech Instrum. 2021;**8**(1). https://doi.org/10.1140/epjti/s40485-021-00070-x