Corregidum to "Novel whitening approaches in functional settings"

Marc Vidal* [1,2] and Ana M. Aguilera*[2]

[1] *Ghent University, Belgium*
[2] *University of Granada, Spain*

Due to production errors, Equation 3 in pp. 3 is written as

$$\langle f,g\rangle_{\mathbb{M}} = \sum_{j=1}^{\infty} \lambda_j^{-1} \langle f,\gamma_j\rangle \langle g,\gamma_j\rangle = \left\langle \Gamma^{1/2\dagger} f, \Gamma^{1/2\dagger} g \right\rangle f, \quad g \in \mathbb{M},$$

while it was originally written as

$$\langle f,g\rangle_{\mathbb{M}} = \sum_{j=1}^{\infty} \lambda_j^{-1} \langle f,\gamma_j\rangle \langle g,\gamma_j\rangle = \left\langle \Gamma^{1/2\dagger} f, \Gamma^{1/2\dagger} g \right\rangle \quad f,g \in \mathbb{M}.$$

In §3, the statement reads, "Then, we can use the inner product (3) to construct a space of isotropic functions (i.e., their covariance operator satisfies the identity), so that the space ends up having a certain Gaussian appearance..." The term *space of isotropic functions* is unclear in the current context. Since our whitening operators are mappings defined through elements over T, this does not necessarily imply that the realizations of $\mathbb{X}$ are on the unit sphere $S = \{f \in \mathbb{M} \mid \|f\|^2 = 1\}$. The isotropy property would be satisfied when whitening the basis expansion coefficients in the direction of its transpose, assuming dependencies in a secondary domain exist. Therefore, one could use the following instead: "....to construct *a space of whitened/orthogonalized functions* (i.e., their covariance operator satisfies the identity), so that the space ends up having a certain Gaussian appearance..." .

In §4, the sentence "As 2tr $(\Gamma_{X\mathbb{X}})$ is the only dependence between the original and the whitened variable, the minimization problem can be reduced to the maximization of tr $(\Gamma_{X\mathbb{X}})$." reads also as ".. is the only *dependent term*...".

In the Technical proofs (first paragraph), due to abuse of notation, in the sentence "Note that Condition 1 cannot be reached when $\langle X,\gamma_j\rangle^2 = \lambda_j$, or for $c_j \to c > 0$, $\langle X,\gamma_j\rangle^2 = \lambda_j c_j$...", X stands for a deterministic function.

References

Vidal, M. and Aguilera, M. (2023). Novel whitening approaches in functional settings. *Stat*, 12(1):e516.
Vidal, M., Rosso, M., and Aguilera, A. M. (2021). Bi-smoothed functional independent component analysis of EEG data. *Mathematics*, 9:1243.

*For correspondence: marc.vidalbadia@ugent.be (M.V.), aaguiler@ugr.es (A.M.A)