Supplemental Document

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Estimation of the full shape of the crystalline lens *in-vivo* from OCT images using *eigenlenses*: supplement

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Estimation of the full shape of the crystalline lens *in-vivo* from optical coherence tomography images using *eigenlenses*: supplemental document

***Eigenlenses* and *eigencenters*.** Figure S1 shows an example of the construction of an *ex-vivo* lens of age 65 y/o with *eigenlenses* [1].

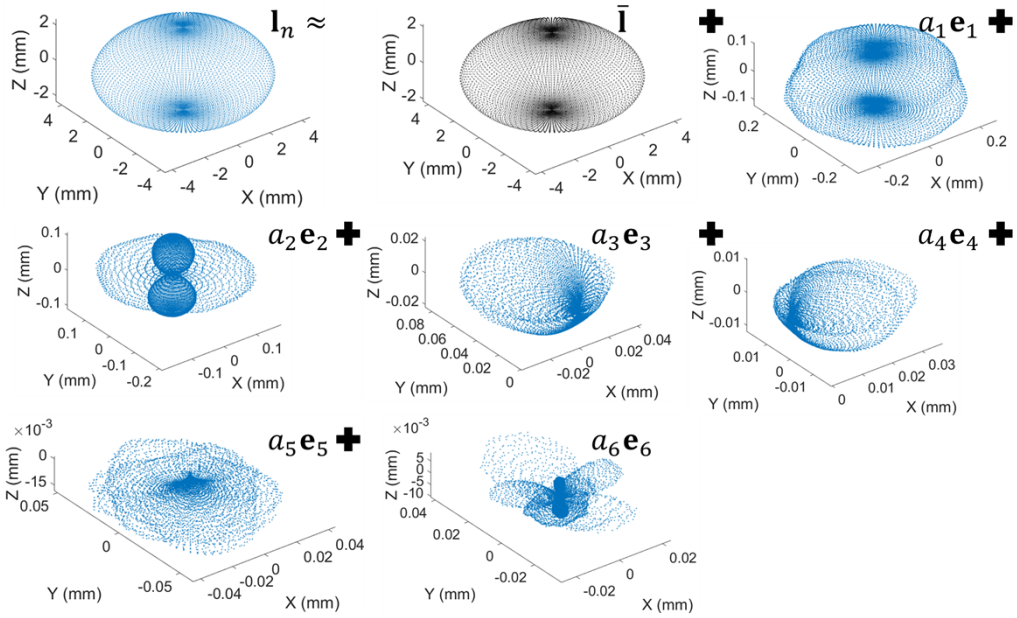

Fig. S1. Example of the construction of the first training ex-vivo lens (age 65 y/o) with eigenlenses, obtained as $\mathbf{l}_1 \approx \bar{\mathbf{l}} + \sum_{k=1}^{6} a_k \mathbf{e}_k$. In this lens $a_1 = -17.6$, $a_2 = 10$, $a_3 = -2.5$, $a_4 = -1.1$, $a_5 = -2.3$, and $a_6 = 1.0$.

Pupil diameter analysis. Figure S2 shows the $\hat{a}_k$ coefficients and the geometrical parameters (DIA, VOL, LSA and EPP) estimated with the proposed *eigenlenses* method as a function of the pupil diameter (PD) from which the estimation of the full lens shape is obtained (n=17 subjects at 0 D of accommodation). We investigated coefficients and parameters for PDs between 3.4 to 6.5 mm.

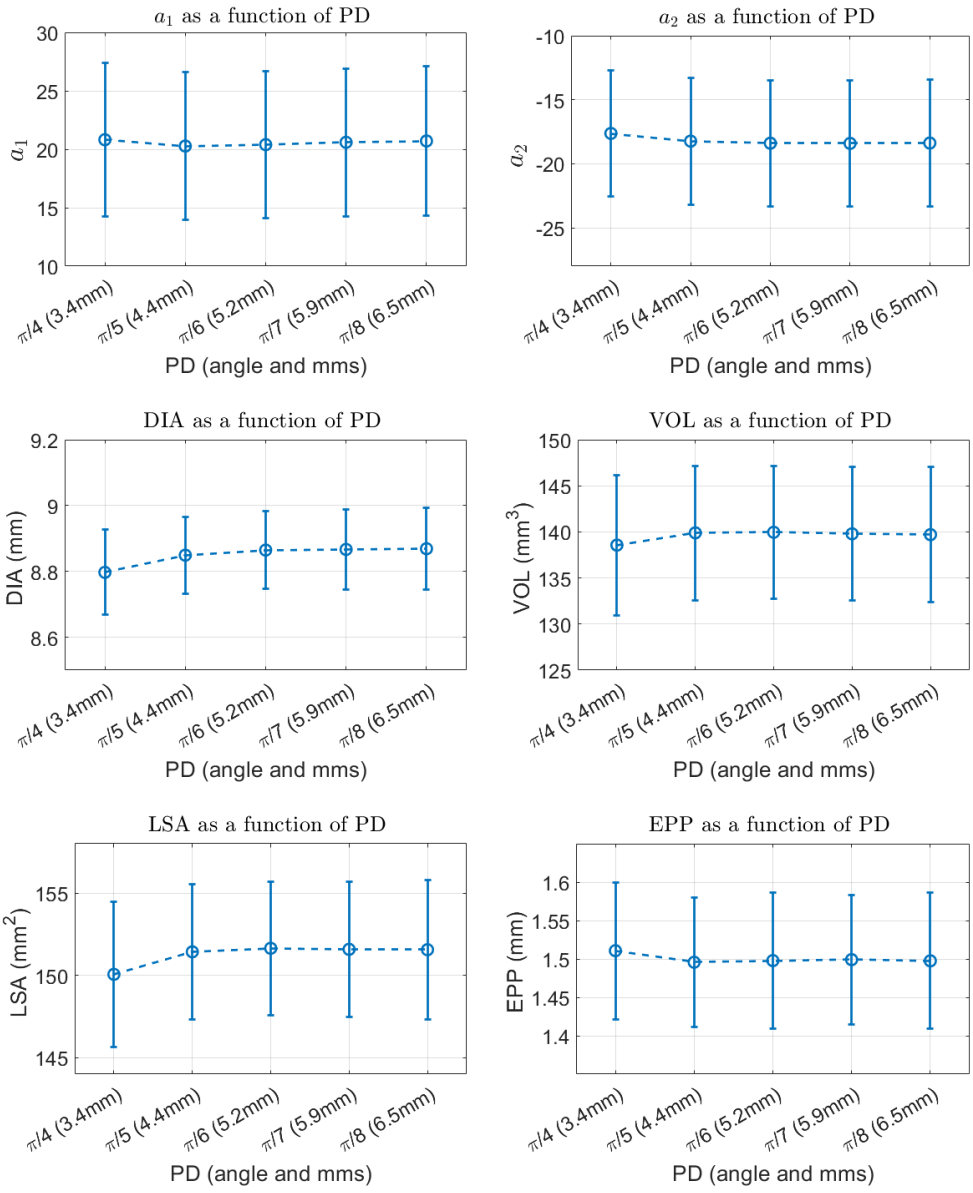

Fig. S2. $\hat{a}_1$, $\hat{a}_2$, DIA, VOL, LSA and EPP calculated as a function of the pupil diameter (PD) from which the full shape estimation was obtained.

References

[1] E. Martinez-Enriquez, A. de Castro, and S. Marcos, "Eigenlenses: a new model for full crystalline lens shape representation and its applications," *Biomed Opt Express,* vol. 11, pp. 5633-5649, Oct 1 2020.