that the AO control system performs quite well correcting those aberrations that is able to detect.

One of the most important concerns when employing segmented mirrors is the presence of undesired diffraction effects. This is particularly important in retinal imaging where the size and quality of the PSF determines the achievable image resolution. But with a 98% fill factor and carefully cophased segments, the AO mirror tested in this work has shown, under the performed test, to be relatively free of these effects.

5. Conclusions

A MEMS segmented AO mirror (37 segments) has been used as the aberration corrector in an AOSLO to evaluate the capabilities and potential of this type of technology in vision systems.

Some tests using a model eye were initially performed. They showed: i) that the flatness of the segments in the mirror was high enough to not affect the AO performance in the sense that the same image quality is obtained correcting positive or negative defocus and ii), that neither the PSF recorded from a flat AO mirror nor the DPIs registered after correcting different amounts of defocus showed unwanted diffraction effects from the segments.

Retinal images located at the fovea and 1° temporal were acquired from 4 normal subjects. The AO correction yielded a wavefront error (sampled by 37 lenslets) always below 0.11 μm and, despite the moderate number of segments in the AO mirror, cone photoreceptors were imaged as close as 0.25° from the foveal center in one of the subjects. It is possible, considering the normal inter-subject variability, to acquire retinal images with similar quality to that obtained with AOSLOs that make use of AO mirrors based on different technologies.

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