Golden Angle Based Scanning for Robust Corneal Topography with OCT

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Corneal topography allows the assessment of the cornea's refractive power which is crucial for diagnostics and surgical planning. The use of optical coherence tomography (OCT) for corneal topography is still limited. One limitation is the susceptibility to disturbances like blinking of the eye. This can result in partially corrupted scans that cannot be evaluated using common methods. We present a new scanning method for reliable corneal topography from partial scans. Based on the golden angle, the method features a balanced scan point distribution which refines over measurement time and remains balanced when part of the scan is removed. The performance of the method is assessed numerically and by measurements of test surfaces. The results confirm that the method enables numerically well-conditioned and reliable corneal topography from partially corrupted scans and reduces the need for repeated measurements in case of abrupt disturbances.
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