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[906] Lensless endoscopy using a fiber bundle and holographic imaging approach

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Endoscopic imaging enables diagnosis and monitoring of many diseases in vivo, inaccessible to the technical means of standard imaging modalities in terms of spatial limitations. However, in the field of biomedical-optics the integration of focusing and scanning mechanisms into small endoscopes is very challenging. We therefore evaluated an endoscopic approach that may not require any lenses or scanners by combining a fiber bundle with holography. We can demonstrate our approach with 2D- and 3D-image-data sets of a resolution target as well as images of a biological sample. The performance of different fiber bundles, each associated with individual challenges, has also been compared.

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