
High definition 3D light-field communication and display with large viewing angle

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Dynamic light field display provides a more realistic 3D representation of a moving scene with the correct spatial occlusion relation at different angles, which leads to higher display and transmission requirements. However, its narrow viewing angle remains an obstacle to many applications. The compound lens with the aperture-stop is designed and optimized, which suppresses the optical distortion within the large viewing angle and improves the light control accuracy. In order to further accurately construct the spatial pixel position, a correction and coding method based on the pre-detection of optical path error including the residual optical distortion and the structural errors is presented. Experimental results show that the proposed method effectively reduce the 3D image distortion within a large viewing angle. To create faithful immersive remote real-time 3D light field interacting in a face-to-face manner, a high definition 3D light field communication and display system over 21 km with above 110-degree viewing angle is demonstrated, which can simultaneously provide accurate depth cues and occlusion relationship.



Short Bio:

Xinzhu Sang received his PhD degree in Electronic Science and Technology from Beijing University of Posts and Telecommunications, China. He is a full professor of the State Key Laboratory of Information Photonics and Optical Communications at Beijing University of Posts and Telecommunications, China.