

LightTrans' talk at WOST 2019

Design and Optimization Strategy of Coupling Gratings for Near-Eye Displays

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Abstract

Lightguide-based near-eye display devices are drawing much interest recently, and one of the key technologies of such devices are coupling gratings for the planar lightguide. Based on an analysis in the spatial-frequency domain, we put forward a design strategy which helps to determine the supported field-of-view, and to find a reasonable value of the grating period and orientation. Subsequent optimization, using the rigorous Fourier modal method for the grating efficiency calculation, can be employed to find the suitable grating profiles that deliver uniform diffraction efficiencies over the desired angular range.