

LightTrans' Talk at SPIE Photonics West 2021

Design and Analysis of Large-Angle Beam-Splitting Metagratings

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Metasurfaces that are composed of nanopillars with high refractive indices have great potential in different applications. For example, metagratings have been shown to have superior performance in comparison to those traditional ones. Beam-splitting gratings with large splitting angles and power uniformly among orders are often needed in modern optical devices, e.g. the LiDAR systems, so to ensure high-precision acquisition of the depth information. Metagratings seem to be a good candidate for this task and we will present the design and analysis workflow of beam-splitting metagratings in the physical-optics software VirtualLab Fusion. That includes: 1) selection of the proper nanopillars as the building blocks / unit cells of the metagrating, 2) spatial distribution of the nanopillars, 3) parametric optimization of the whole metagrating structure, and 4) evaluation of its performance in a complete optical setup, including realistic light source and lenses.

