Shaping of White Light by Using Prism / Grating / Mirror Cells Arrays
Abstract

Micro-optical elements, like gratings, prisms and mirrors can be arranged to deflect light into expected direction and so to generate customized patterns. Such cells arrays are often used behind LED sources, and the design of cells arrays requires proper consideration on colors and coherence. In this example, cells arrays consisting of gratings, prisms and mirrors are designed to generate a LightTrans logo.
Design Task

How to design a cells array for generation of desired light pattern?

- array size 12.5x12.5 mm
- number of cells 100x100

LED source
- emitter size 100x100 µm
- RGB white light [473, 532, 635 nm]

Cells array structure consists of:
- prisms
- gratings
- mirrors
Results – Grating Cells Array

The grating cells array exhibits strong dispersion performance simulation with RGB colors and partial coherent LED source within 9 seconds!
Results – Prism Cells Array

prism tilt angles (°)

prism cells array shows less dispersion effect
Results – Mirror Cells Array

mirror cells array exhibits no dispersion
<table>
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<th>Shaping of White Light by Using Prism / Grating / Mirror Cells Arrays</th>
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