Tailored Light Outcoupling from Glass Plate with Arbitrarily Shaped Apertures
Abstract

In modern imaging and display systems, apertures with different shapes may be encountered. For example, the in- and outcoupling apertures of the waveguide in near-to-eye displays often have to be tailored in certain shapes. With the region concept in VirtualLab, apertures with arbitrary shapes can be defined flexibly. As examples, several aperture shapes are presented. Situations with fully and partially illuminated apertures are shown as well.
Modeling Task

- Point source
- Collimation lens (NA = 0.15)
- Glass plate with differently shaped apertures on the back side

Diagram shows light rays from a point source passing through a collimation lens, then through a glass plate with various apertures, resulting in a pattern on the right side.
Results

- **Spot diagram**
- **Intensity pattern** (real color view)
- **Rectangular aperture**
- **Fully illuminated aperture**
Results

- Elliptical aperture
- Fully illuminated aperture
- Spot diagram
- Intensity pattern (real color view)
Results

- Polygonal aperture
- Spot diagram
- Intensity pattern (real color view)
- Partially illuminated aperture
Results

- Sampled aperture
- Spot diagram
- Fully illuminated aperture
- Intensity pattern (real color view)
<table>
<thead>
<tr>
<th>title</th>
<th>Tailored Light Outcoupling from Glass Plate with Arbitrarily Shaped Apertures</th>
</tr>
</thead>
<tbody>
<tr>
<td>version</td>
<td>1.0</td>
</tr>
<tr>
<td>VL version used for simulations</td>
<td>7.3.0.41</td>
</tr>
<tr>
<td>category</td>
<td>Technology Use Case</td>
</tr>
</tbody>
</table>