UseCase.0029 (1.0)

Parameter Overview

**Keywords:** Parameter Overview, grating equation, find, set, configure, quick, fast, system, comparison, check
Introduction

- This use case introduces the Parameter Overview dialog which allows you to set all numerical parameters within a Light Path Diagram at once.
Rationale for the Parameter Overview

The VirtualLab user interface was designed with the following premises:

- **Modular**: For example you can edit the interfaces of a Double Interface Component and of a stack with the very same dialogs.
- **Explanatory**: Additional information and images explain complex issues.
- **Structured**: Tab pages and boxes group related controls.
Rationale for the Parameter Overview

• However, this leads to many user interactions required to change a single parameter.

• To change the period of a sawtooth grating for example, you need to do the following.
Rationale for the Parameter Overview

1. double click
2. click
3. click
4. change value
5. confirming and closing all edit dialogs by three clicks to OK buttons.
Usage Example

- For a sawtooth grating system, both the wavelength and the period shall be doubled using Light Path > Parameter Overview.
- Original result:
Parameter Overview Dialog

- The Parameter Overview dialog mainly consists of a table containing all numerical parameters of a Light Path Diagram.
- You can set a new value for each parameter directly in the table.
Hierarchy in the Dialog

- The parameters are presented in a hierarchy. The top level lists the distinct *Light Path Elements*, the second level lists "Categories" e.g. the interfaces, media, and stacks in each Light Path Element, and the third level lists the actual *Parameters*.
- The hierarchy levels can be collapsed or expanded by clicking on the +/- symbols or the 1, 2, * in the first column.

<table>
<thead>
<tr>
<th>Light Path Element</th>
<th>Category</th>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Basal Positioning</td>
<td>Spherical Angle Theta</td>
<td>0°</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Spherical Angle Phi</td>
<td>0°</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Angle Zeta</td>
<td>0°</td>
</tr>
<tr>
<td></td>
<td>Base Block Medium (....)</td>
<td>Thickness of Base Block</td>
<td>10 mm</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Material of Homogeneous Medium</td>
<td>Constant Absor</td>
</tr>
<tr>
<td>Sawtooth Grating #1</td>
<td></td>
<td>Sawtooth Grating Interface #1</td>
<td>20 mm</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Sawtooth Grating Interface #1</td>
<td>20 mm</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Sawtooth Grating Interface #1</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Sawtooth Grating Interface #1</td>
<td>2 μm</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Sawtooth Grating Interface #1</td>
<td>1 μm</td>
</tr>
</tbody>
</table>
Hierarchy in the Dialog

1: The table is completely collapsed.

2: The Light Path Elements are expanded, all Categories are collapsed.

*: Everything is expanded.
Double the Wavelength

Change to “1370 nm”
Filter for Period

Enter “Period” in the Search field for quick finding.
Double the Period

Change to "4 µm"
Result Comparison

The diffraction angles remain unchanged, as expected from the grating equation. But of course the efficiencies differ.
Summary

• The Parameter Overview document enables the user to check and change any and arbitrary many numerical parameters of an optical system very fast and efficiently.

• By entering search keywords for parameters that are of interest, VirtualLab filters all relevant parameters.

• The Parameter Overview document can be used for an easy comparison of settings of different Light Path Diagram documents.