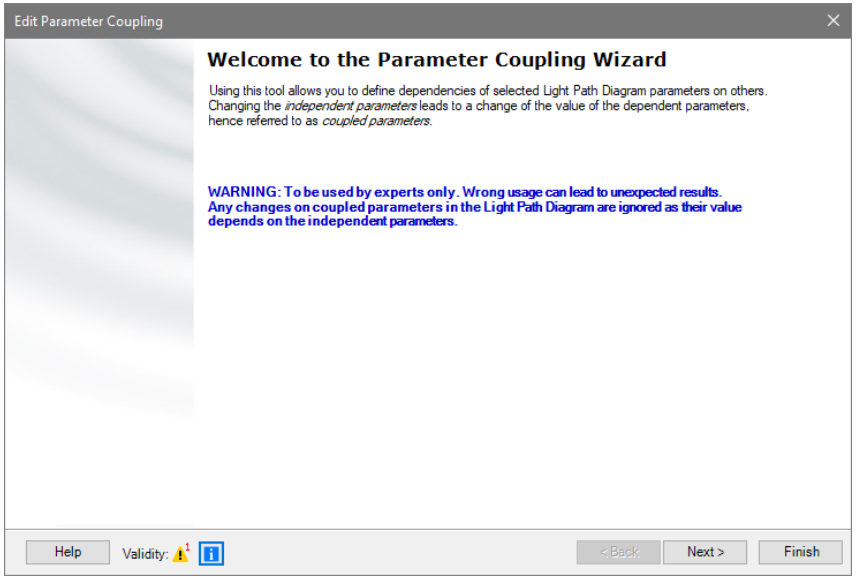
Coupling of Parameters in VirtualLab Fusion

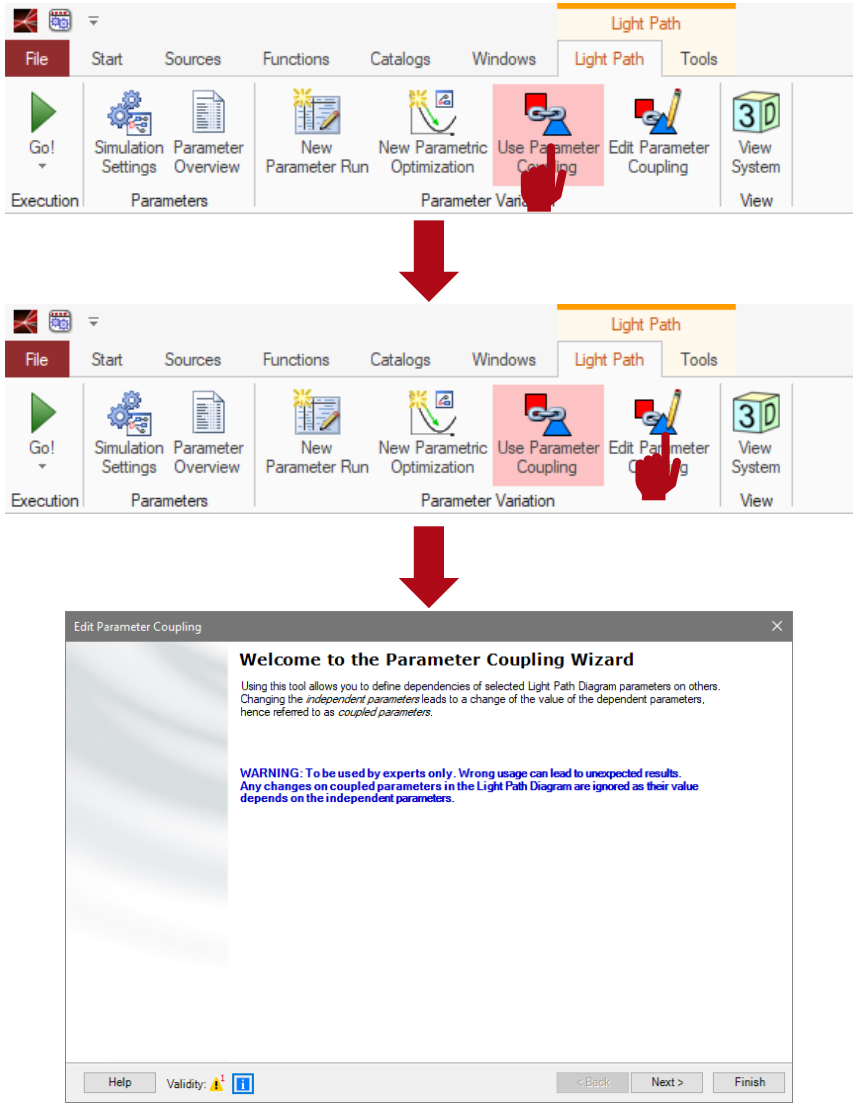
Abstract



The parameter coupling feature of VirtualLab enables the coupling of each parameter of an arbitrary optical setup. Further, the values can be used to re-calculate other parameters and thus this feature allows to create very complex relations of these parameters. For instance, parameter coupling is helpful if specific parameters of the optical system are intended to have fixed relations during a variation or optimization.

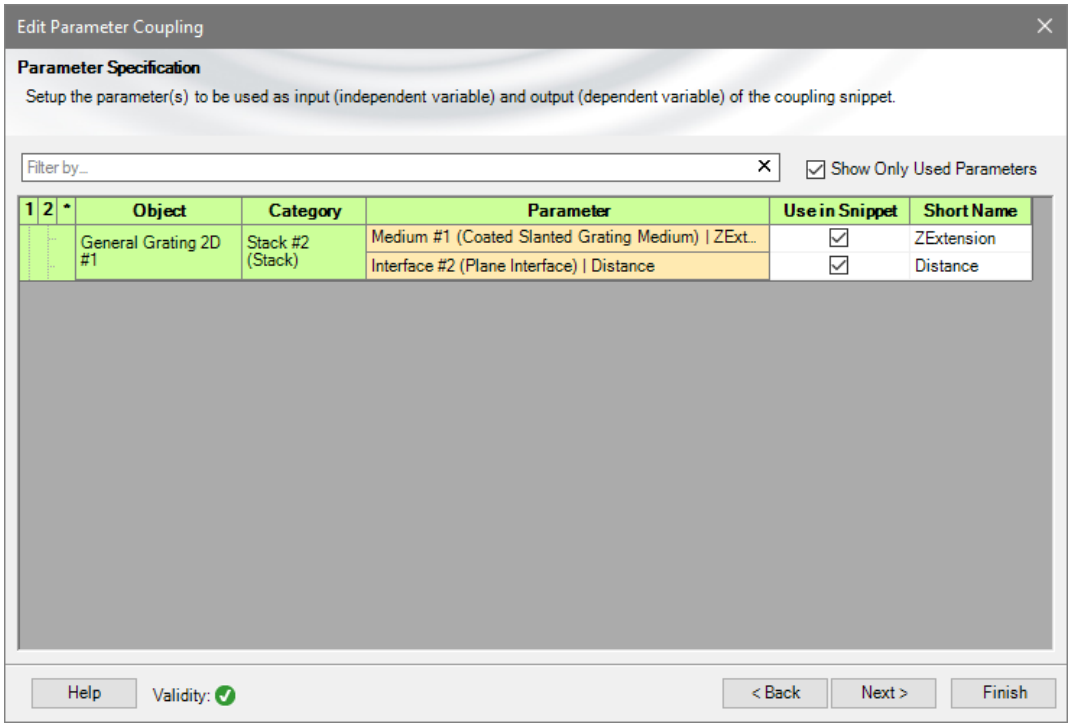
Set Up Parameter Coupling

- In order to use the parameter coupling feature of VirtualLab activate the option “*Use Parameter Coupling*” for a given optical setup.
- Afterwards, the “*Edit Parameter Coupling*” button is available.
- By clicking the “*Edit Parameter Coupling*” button, the parameter coupling wizard appears.



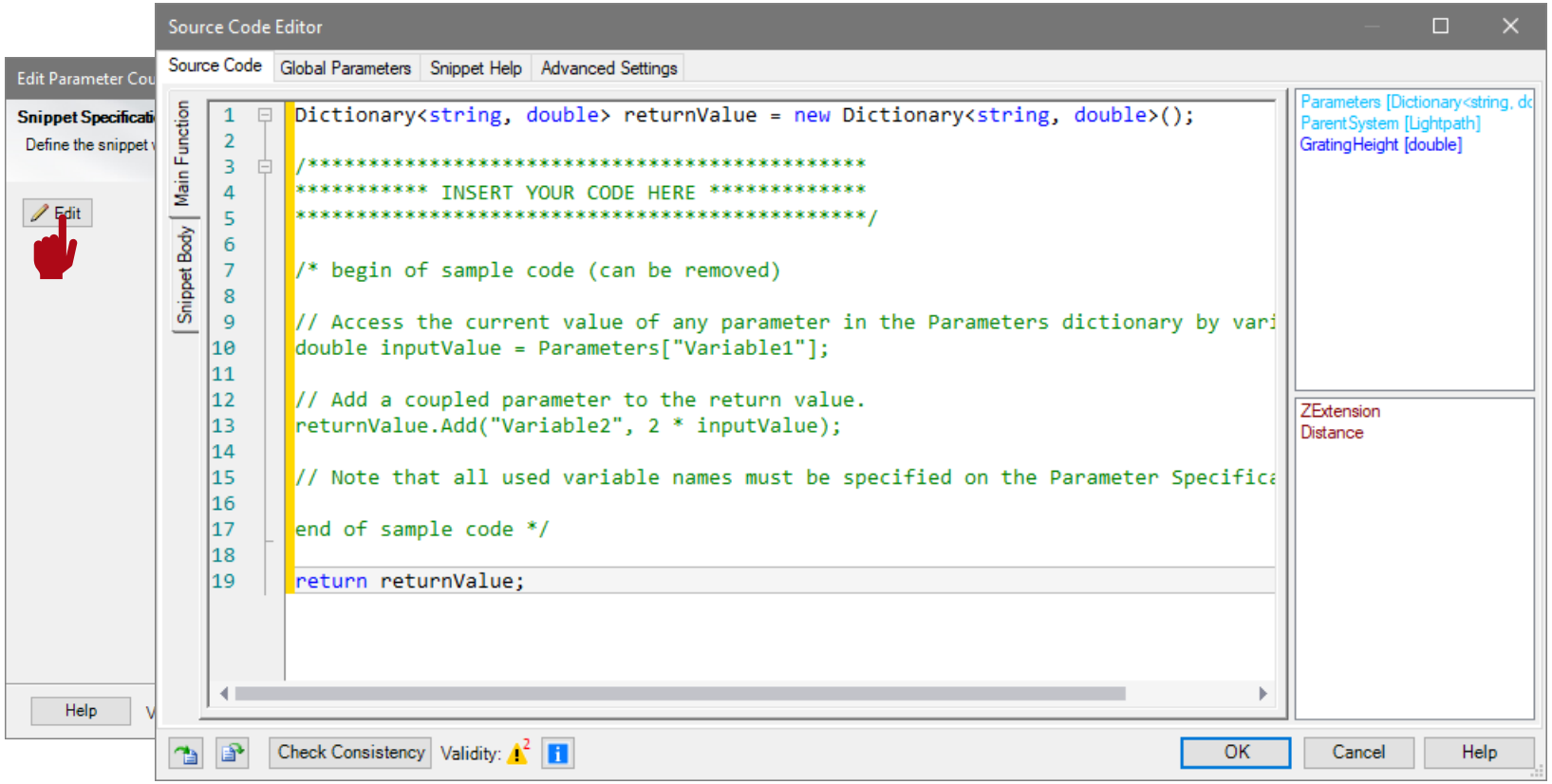
Choose Involved Parameters

- By clicking “*Next*”, a table is shown, which contains all parameters of the current optical setup.
- Please select all parameters for coupling and necessary calculation. For instance, the parameters “*ZExtension*” and “*Distance*” of a grating interfaces are chosen.



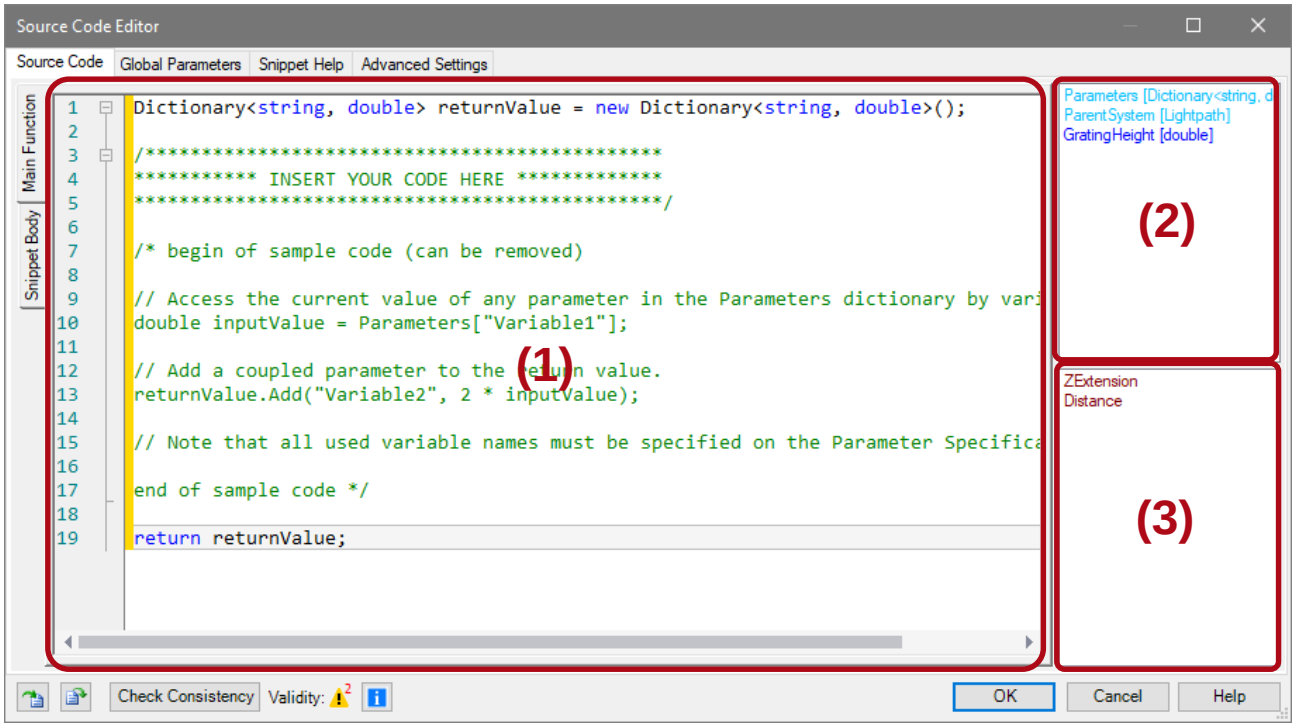
The Source Code Editor

- After choosing the parameters, the snippet which controls the coupling has to be set.
- By clicking "*Edit*" the source code editor opens.



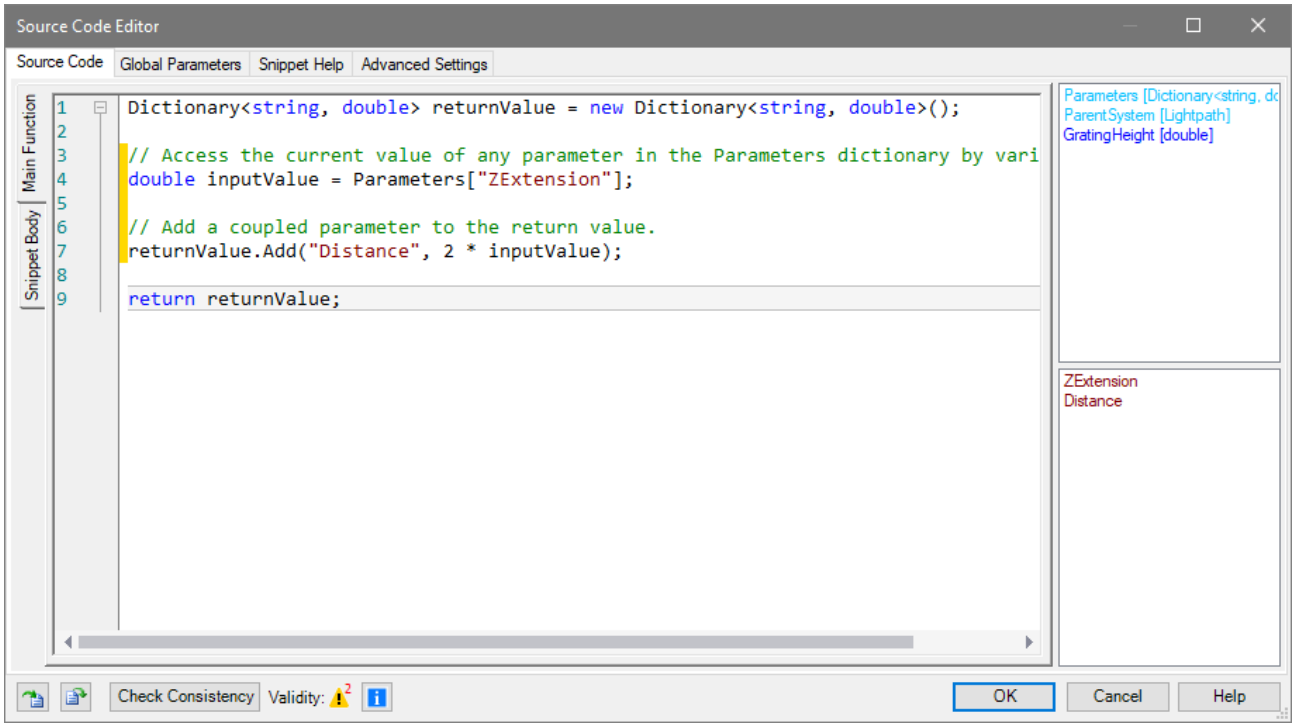
The Source Code Editor

- The source code tab contains three areas:
  - the source code (center area) (1)
  - global variables resp. parameters (upper right area) (2)
  - chosen system parameters (lower right) (3)



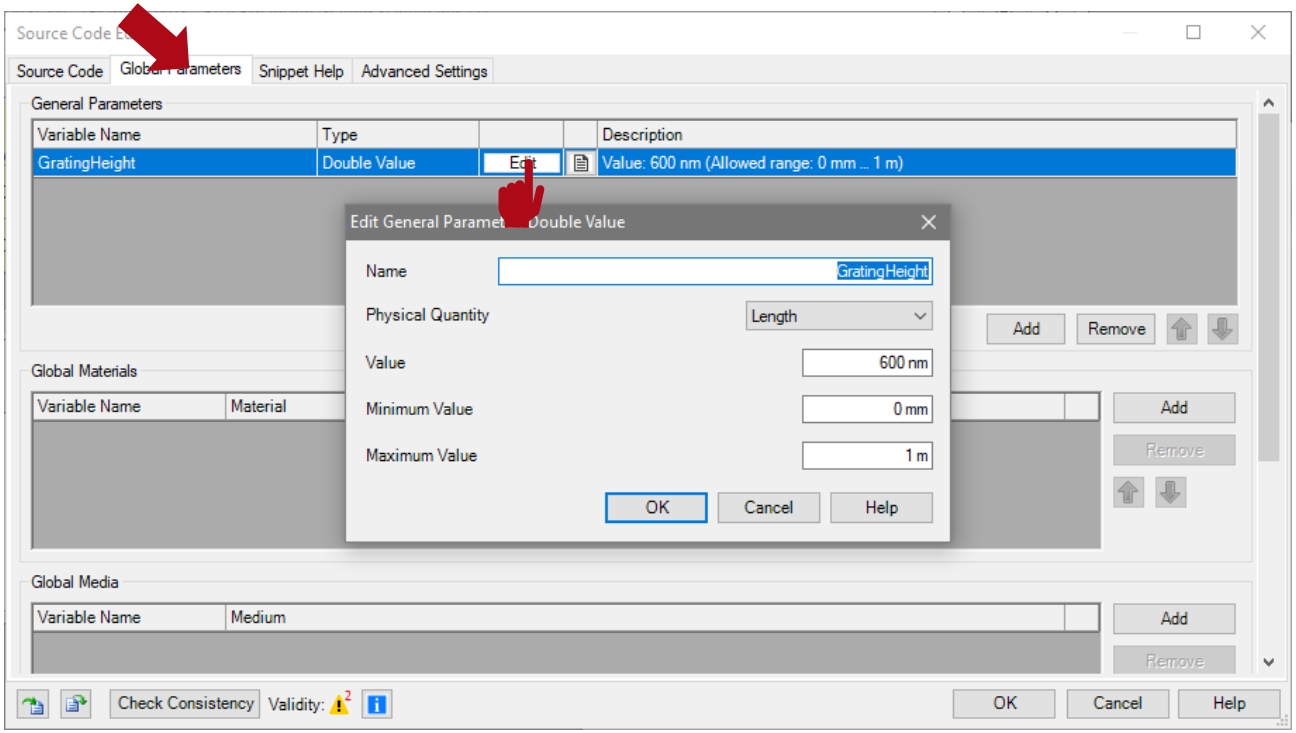
General Example of Parameter Coupling

- In general, the chosen parameters have to be read from the dictionary and saved to a variable (line 4).
- Afterwards, the value can be used as output for another parameter and further calculated, e.g. doubled (line 7).



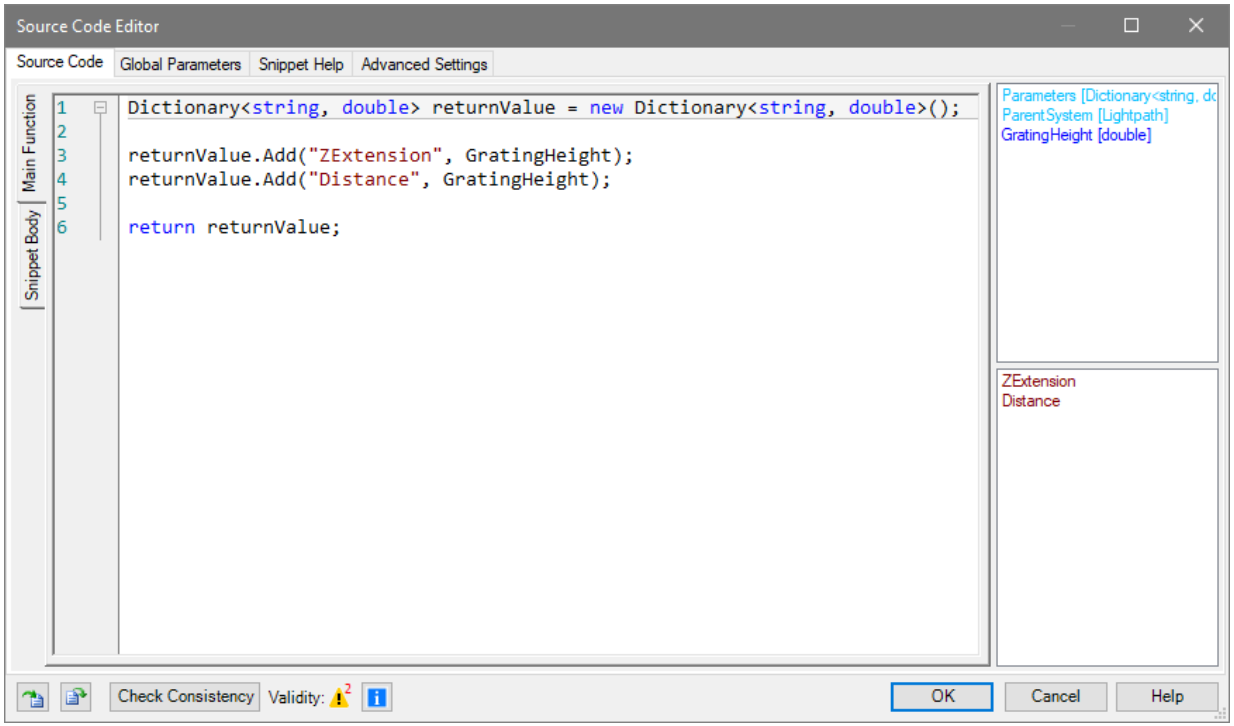
Definition of Global Parameters

- In this particular example, it is helpful to define a new global variable, which later appears on the parameter coupling window.
- This can be done in the "*Global Parameters*" tab.
- The variable can exhibit different types and physical quantities.



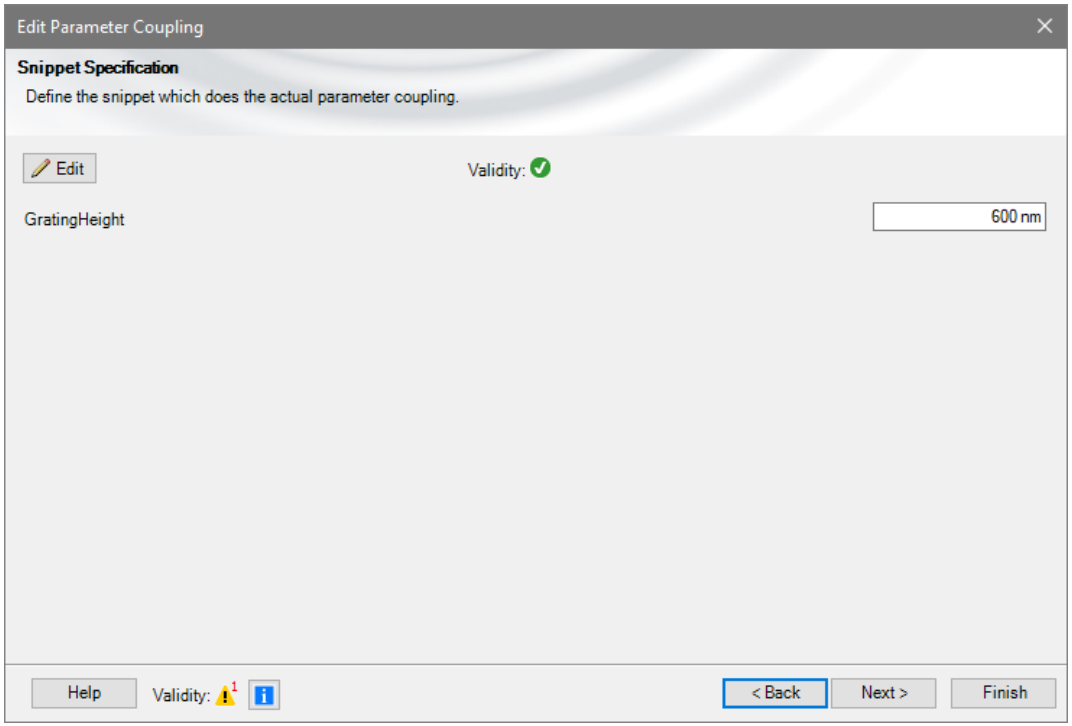
Particular Example of Parameter Coupling

- In this example, the global variable is used to return its value to both chosen parameters of the system.
- Thus, no parameter has to be read from the dictionary or re-calculated.



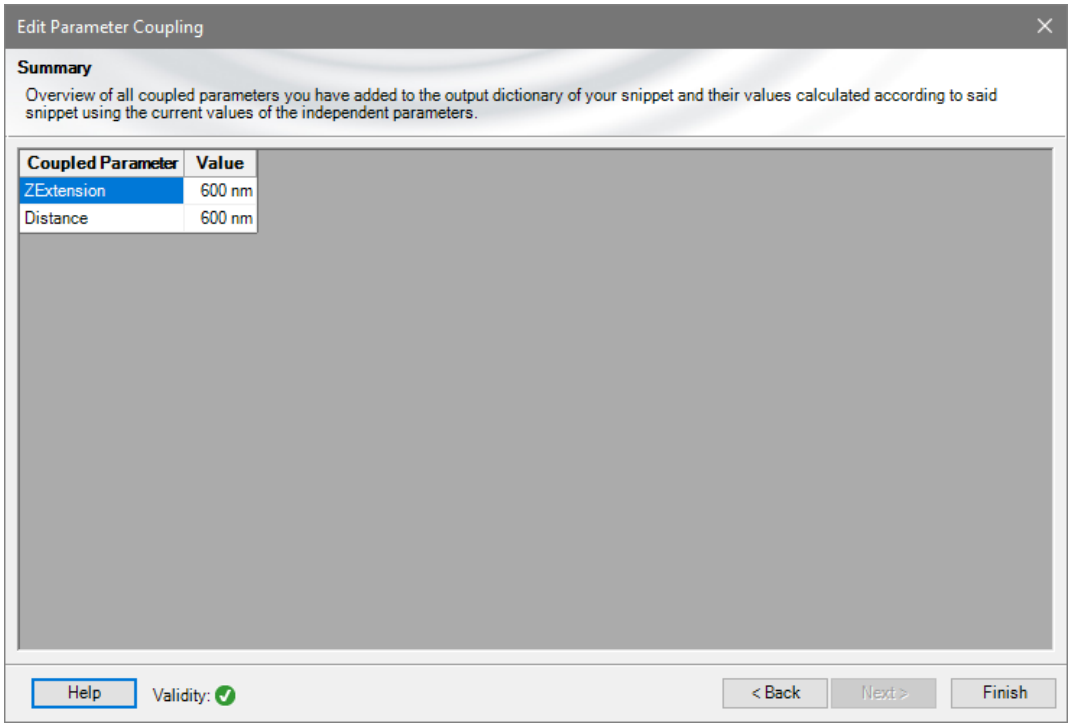
Particular Example of Parameter Coupling

- After closing the source code editor, the defined global variable "*GratingHeight*" appears.



Final Check of the Set up Parameter Coupling

- On the last page of the wizard, the returned parameters and values can be checked.



Document Information

title	Coupling of Parameters in VirtualLab Fusion
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VL version used for simulations	7.3.0.50
category	Feature Use Case