Optcom

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Sacha Medaer

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CONTENTS:

We are glad that you are interested in Optcom's source code which you can find in the github repo .

CHAPTER

ONE

TUTORIALS

The tutorials are available in the github repo in the directory *tutorials/*.

CHAPTER

TWO

MODULES DESCRIPTION

This document will drive you through the architecture of Optcom.

2.1 Simulation Framework

The Layout, Domain, Field and Component are the building blocks of Optcom's optical system simulation framework.

2.1.1 Field

Fields represent an electric or optical signal. The object Field can contain multiple channels and save the values of the electro-magnetic field envelopes as well as other physic's characteristics. Moreover, a variety of helper functions are available for Field objects.

2.1.2 Component

Components represent electric or optical physical block such as laser, fiber and so on. There are two types of components in Optcom. First, `StartComp` which create a Field object and can launch the simulation. Second, `PassComp` which receive Field objects, transform it, and pass it along to the next component. A component is composed of ports.

2.1.3 Domain

The domain contains information, i.e. physic's parameters, that will be shared by all components.

2.1.4 Layout

A Layout allows to build a system by connecting the components to each other via their ports. Moreover, the Layout is managing the propagation of the Domain and Fields through the system.

2.2 Simulation Tools

2.2.1 Constraints

The Constraint objects represent constraints that the layout must comply whith while propagating Field objects in the Layout.

2.2.2 Effects

The Effect object represent electric / optical effect that can be used to define equations.

2.2.3 Equations

The Equation object is used to define equations that need a numerical solver and which describe the Field object transformation in a component.

2.2.4 Parameters

The Parameter object is a standalone object which can be used as a helper object. It describes a physic's parameter such as the refractive index.

2.2.5 Solvers

The solver object is used to numerically solve the Equation objects.

CHAPTER

THREE

OPTCOM

3.1 optcom package

3.1.1 Subpackages

optcom.components package

Submodules

optcom.components.abstract_component module

optcom.components.abstract_fiber_amp module

optcom.components.abstract_fiber_amp_2levels module

optcom.components.abstract_pass_comp module

optcom.components.abstract_start_comp module

optcom.components.cw module

optcom.components.fiber module

optcom.components.fiber_coupler module

optcom.components.fiber_yb module

optcom.components.gaussian module

optcom.components.gaussian_filter module

optcom.components.ideal_amplifier module

optcom.components.ideal_combiner module

Submodules

optcom.equations.boundary_conditions.abstract_boundary_conditions module

optcom.equations.boundary_conditions.boundary_conditions_ampnlse module

Module contents

optcom.equations.convergence_checker package

Submodules

optcom.equations.convergence_checker.abstract_convergence_checker module

optcom.equations.convergence_checker.convergence_checker_consecutive module

Module contents

Submodules

optcom.equations.abstract_ampnlse module

optcom.equations.abstract_cnlse module

optcom.equations.abstract_equation module

optcom.equations.abstract_field_equation module

optcom.equations.abstract_nlse module

optcom.equations.abstract_re module

optcom.equations.abstract_re_fiber module

optcom.equations.ampanlse module

optcom.equations.ampgnlse module

optcom.equations.amphnlse module

optcom.equations.anlse module

optcom.equations.ase_noise module

optcom.equations.canlse module

Module contents

3.1.2 Submodules

3.1.3 optcom.config module

3.1.4 optcom.domain module

3.1.5 optcom.field module

3.1.6 optcom.layout module

3.1.7 Module contents

CHAPTER

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