



Objective:

Simulation, design and investigation of photonic devices.

Your profile:

- Studies in electrical engineering, photonics, physics, optotechnology or a related field of study
- Interest in optics, photonics
- Basic knowledge of electromagnetic field theory and numerical simulation methods
- Advantageous experience with simulation software (e.g., Lumerical, COMSOL, Python, MATLAB)
- Independent, analytical, and structured working style

We offer:

- Individual supervision and support
- Opportunity to participate in exciting photonic research project
- Gain experience with current state of the art simulation tools

Background:

Silicon photonics enables the integration of complex optical circuits on a single chip and forms the basis for modern applications in optical communications, sensing, and signal processing. In addition to classic single-mode signal processing, mode-division multiplexing is gaining in importance because it allows multiple modes of a waveguide to be used simultaneously.

The signal on the chip is guided through straight waveguides, bent waveguides, tapers, and crossings. All these devices need to be adapted for multimode applications as part of more complex systems.

Your task:

In this work waveguide crossings have to be investigated. Therefore, various implementation concepts will be studied and examined with regard to losses, crosstalk, bandwidth, and manufacturing tolerances. Several promising crossings are designed, and a layout is created and may be characterized using metrological methods.

Language:

German or English

Contact:

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BA/FA/MA

Multimodal waveguide crossings on integrated photonic circuit

