

Design tools and design flows for integrated photonics

Twan Korthorst

PhoeniX Software, Hengelosestraat 705, 7521PA Enschede, the Netherlands

e-mail: twan.korthorst@phoenixbv.com

The lecture will discuss the available design tools and some example design flows for integrated photonic circuits (PICs). It will show the special requirements for photonics and will compare this, so called, Photonic Design Automation (PDA) with Electronic Design Automation (EDA). The different steps of an 'ideal' design flow will be shown in detail. The current situation will be discussed showing the various available tools and improvement points will be addressed. One of the main improvements for PDA is the use of a mature and complete Process Design Kit (PDK) as widely being used in the electronics semiconductor industry and has been introduced for photonics by European collaborations over the last few years. The PDK will be discussed in more detail. Another improvement that can be controlled from the PDK are automated Design Rule Checks (DRC). A couple of examples of Design Rule Checks will be given, showing the huge benefits when this can be performed automatically.

References

- [1] Korthorst, Twan, Stoffer, Remco, Bakker, Arjen, "Photonic IC design software and process design kits", Advanced Optical Technologies, Volume 4, Issue 2, pp.147-155, 04/2015.
- [2] Heins, Mitchell, et. al., "Design Flow Automation for Silicon Photonics: Challenges, Collaboration and Standardization", Silicon Photonics III, Chapter 4, 2016.