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Silicon Photonic Components for Optical Data Links in High Energy Physics Experiments ^[1]

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Future high energy physics experiments (HEP) at CERN will produce a higher rate of particle collisions compared to the Large Hadron Collider (LHC) which discovered the Higgs boson. This will lead to higher radiation levels inside the particle detectors and an increase in generated measurement data. Consequently, new optical transceivers that provide high data rates and that can withstand high levels of ionizing and non-ionizing radiation will be needed to read-out the measurement data of the particle detectors. Silicon photonics (SiPh) technology is currently being regarded as a potential solution to address these challenges due to recently demonstrated high data rate optical transmitters and receivers as well as an expected radiation hardness similar to that of silicon particle sensors. Our research aims at answering the question whether high-speed, radiationhard optical transceivers can be designed and manufactured in the SiPh platform.

Technical document file:

 [Silicon Photonic Components for Optical Data- Marcel Zeiler _2015 europractice_ activity report.pdf](#) ^[2]

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