CMOS circuit testing with quantum sensors

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In this project you will develop a new measurement technique to monitor integrated circuits based on the light emission of CMOS transistors with important industrial relevance. You will establish the system requirements and develop an experimental protocol to perform circuits diagnostics by measuring light in the 2 micrometer wavelength range.

You will design and assemble a proof of concept experiment to demonstrate the possibility of detecting infrared light at the single photon level emitted by a CMOS circuit. The work will start with the study of key scientific publications, a study of the current state of the art in the field and the design and realization of an experimental system.

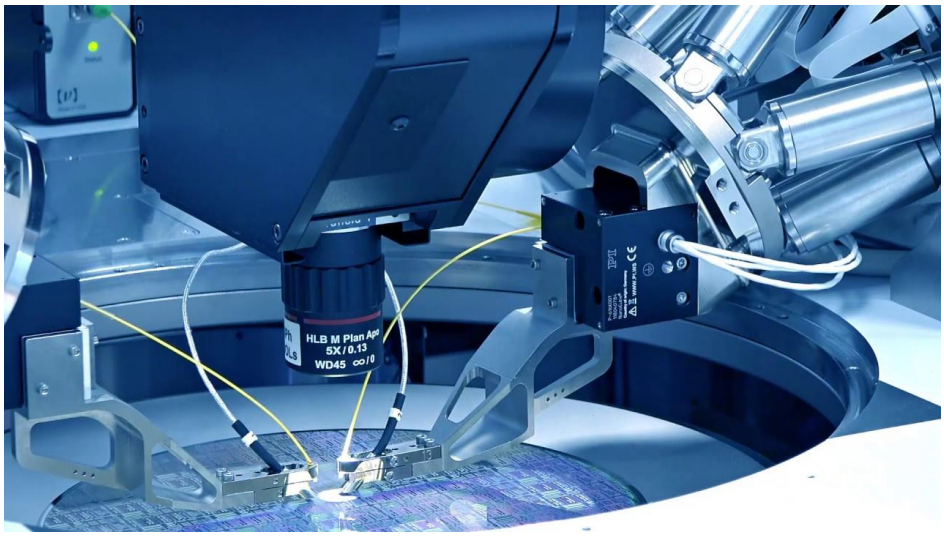

Figure 1. Measurement concept for CMOS circuit testing with quantum sensors: a microscope objective collects infrared light emitted by an integrated circuit under test. This allows for new studies of the circuits performances.