

Bachelor thesis

Resonator enhanced spontaneous emission of Silicon-Germanium quantum dots.

To be able to reach Tbit/s data rates required for future information technology, it is absolutely necessary to implement a data transmission scheme where photons instead of electrons carry information between the logic nodes on a chip. Thus, the development of photon sources controllable on the single photon level which are compatible with the standard, Silicon based chip production technologies is required. Silicon-Germanium quantum dots in combination with optical resonators are highly promising candidates for such sources.

Within this thesis, you will design, fabricate and characterize such Si-integrated photon sources based on single quantum dots. You will learn how to produce

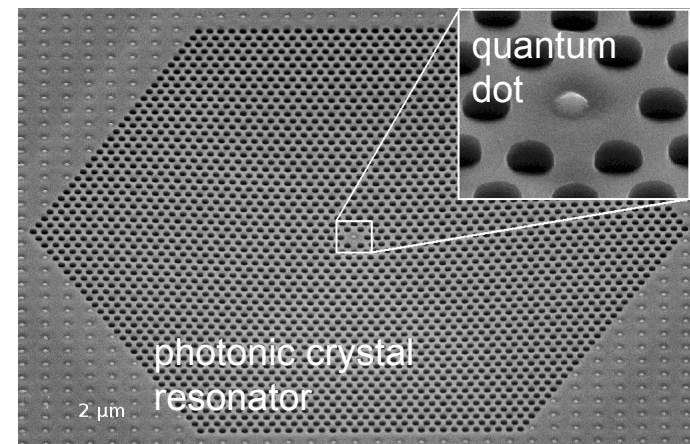
such sources in the clean room of our institute and how to characterize their emission properties on the single photon level.

For more information, please contact or visit us in the semiconductor building, ground floor, office 017!

Duration: 6 weeks

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Single SiGe quantum dot emitter integrated into a photonic crystal resonator