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On-chip Frequency Conversion with a GaAs platform

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Frequency conversion is a well studied effect of nonlinear optics, in which the nonlinear dielectric polarization of a material describes the response to an incident optical field. The result is the generation of new secondary fields of different frequencies, enabling a variety of applications. For instance, in the field of quantum communication it is used to produce entangled photon pairs and photons of telecommunication wavelength.

An approach to achieve high conversion efficiency is to include a highly responsive material. This is the motivation behind GaAs, since it has one of the largest second and third order nonlinear optical coefficients. Now the case of GaAs is well documented in academic literature, where several techniques has been demonstrated. The research interest of the project is to transfer this phenomenon in an integrated setup, where compact size and better scalability are exploited compared to the free-space alternative.

Field of study

Quantum Physics

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Session Classification: Poster session: Enjoy the posters!!!