

Seminar über Ultrafast Science and Technology

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Titel: Third order nonlinearities in all-solid soft glass photonic crystal fibers

While coupling a 1550 nm laser into a fibers core designed for the production of a coherent supercontinuum, the fiber suddenly started to glow and green light in the visible spectrum around 530 nm was seen. The green light got more intense as the coupling power was increased. Analysing the spectra, it was found that the intensity of the green light increases as a cubic function of the coupled power. This phenomena can be explained by a non-linear optical process called third harmonic generation. In the first part of this bachelor thesis the amount of converted light will be determined.

There exists a pure quantum mechanical process, called third-order spontaneous parametric down-conversion, which is a inverse process to the third harmonic generation. Down-conversion processes are the preferred source for the production of entangled photons. The existence of the third-order parametric down-conversion process in the fiber and the future use for the production of entangled photons triplets was investigated.

During these experiments, with increasing laser power, the fiber started to fluoresce. This fluorescence and its origin is further characterized.

Zeit: Donnerstag, 31.10.2019, 11.15h

Ort: **Hörsaal B116**, Gebäude Exakte Wissenschaften, Sidlerstrasse 5, Bern, Schweiz