NOPA stage already allowed us to generate well above 1 μJ of output (setup and data not shown).

The fs amplified cw seed system is a unique source for many quantum optical experiments. We have already analyzed the absolute strength of OPG and use the cw seed laser as an internal reference. Most interesting is the influence of seed statistics on the output fluctuations. For these measurements even seed levels below 100 photons are utilized that have an inherent Poissonian fluctuation already well above the technical noise of the pump laser. In this way we will be able to determine how the transition from the photon picture appropriate for weak cw sources evolves into the classical wave picture that is typically used in the description of OPAs.

Both the fs and the ps OPA seeded by a single frequency continuous laser are sources of pulses with highest control of pulse parameters available at present in the μJ regime. Such pulse energies are needed for many nonlinear excitation schemes. The concept of cw seeding in combination with the appropriate pump laser gives the experimentalist new possibilities for dedicated investigations.

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