

Abstract Submitted
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Two-photon excitation by chirped and optimally shaped pulses¹

MILAN POUDEL, ALEXANDRE KOLOMENSKII, HANS SCHUESSLER, Department of Physics, Texas A&M University College Station TX-77843-4242 — Two-photon fluorescence of different dyes was optimized by using a feedback control femtosecond pulse shaping technique. For optimization we implemented a liquid crystal pulse shaper in a folded 4f set-up with an evolutionary algorithm. The optimization procedure that started with a near transform-limited pulse noticeably improved the two-photon fluorescence. Several signal ratios involving two-photon fluorescence, second harmonic generation and the incident laser power were successfully optimized. The two-photon fluorescence was also optimized by varying the chirp of the laser pulse with a liquid crystal and acousto-optical modulators. The correlation between the two-photon fluorescence and the second harmonic generation was studied, and it was found to decrease when the pulse shape was close to the optimum.

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