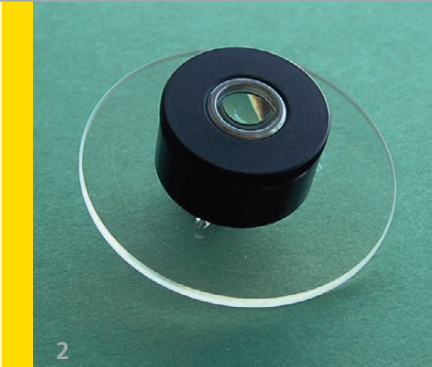
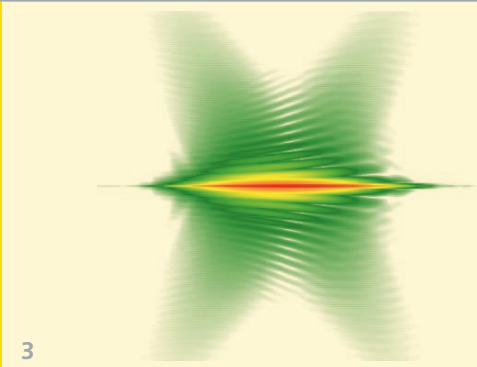


1 Distortion of a 50fs laser pulse in the focal region of an asphere.



2



3

- 1 Distortion of a 50fs laser pulse in the focal region of an asphere.
- 2 Hybrid focusing optics.
- 3 Temporal intensity distribution of a 25fs laser pulse in the focal plane of a microscope objective.

CONTROLLING THE PROPAGATION OF ULTRASHORT LASER PULSES

Background

The extreme intensities, which can be achieved by focusing ultrashort laser pulses, make them very interesting, e.g., for materials processing. The spatial and temporal field distribution of a laser pulse significantly affects the achievable power in the focus of an optics. Therefore, it is essential to know this field distribution and, if necessary, be able to change it adequately. The field distributions of ultrashort laser pulses can be considerably improved and optimally adapted to specific applications by using appropriate tools for design and analysis. Numerical simulations serve as basis for analysis of arbitrary optical systems and design of customized optics. The manipulation of the spatial and temporal field distributions of the laser pulses is accomplished by means of suitable phase elements.

Applications

- Spatially and temporally user-defined field distributions in the focus of an optics
- Generation of multiple foci
- Spatial and temporal pulse splitting

Our Offer

- Design of beam shaping and focusing optics
- Analysis and optimization of existing optics regarding their beam quality and laser pulse attributes
- Analysis of complex optical systems
- Manufacturing of diffractive mirrors / beam shaping elements on planar and curved surfaces
- Realization of lab demonstrators
- Experimental characterization of focused ultrashort laser pulses using scanning SEA TADPOLE

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