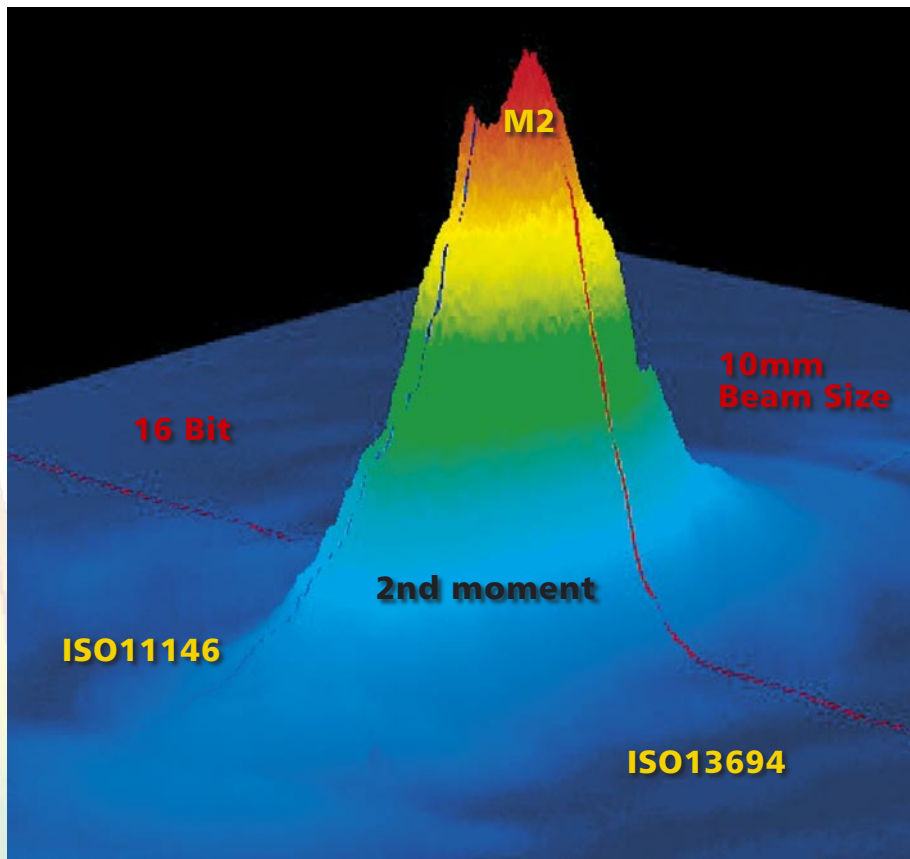


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EUV-VUV-UV-VIS-NIR



Beam Characterization Software for pulsed and cw laser

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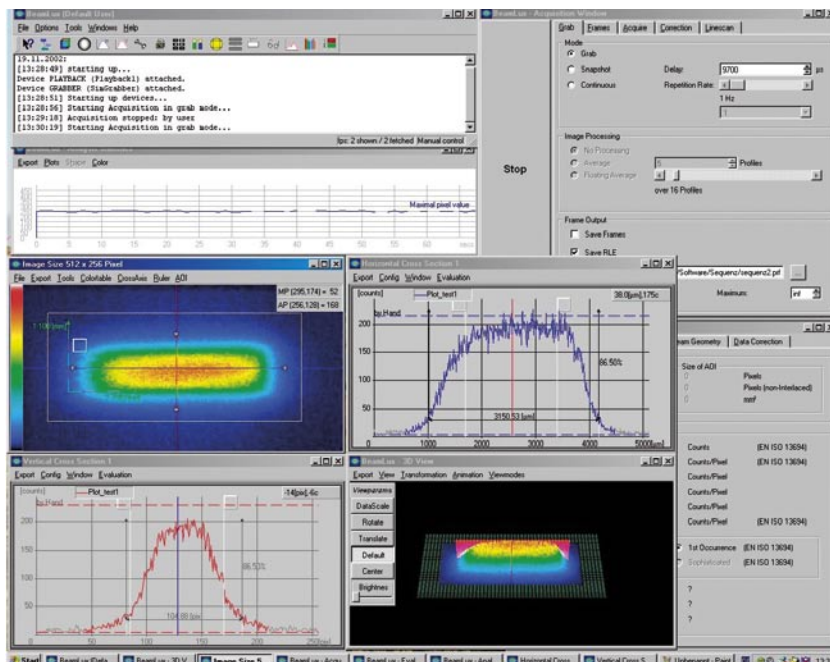
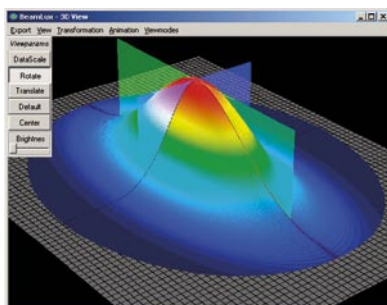
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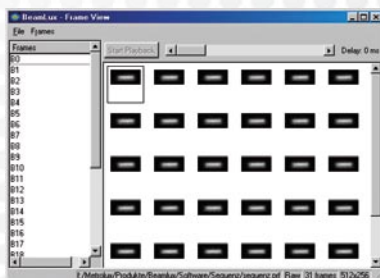
EUV-VUV-UV-VIS-NIR

APPLICATIONS

- online monitoring of almost any laser beam and light source parameters during
- basic adjustment of the laser or light source
- general adjustment on optical systems
- material processing
- medical laser treatments
- diagnosis of the laser stability
- pulse-to-pulse fluctuation
- beam position
- quantitative determination of the plateau uniformity and edge steepness of homogenized laser radiation
- absolute measurement of the laser energy or laser power (with calibrated camera systems)
- control of the coupling for optical fibers
- divergence measurements
- near- and far-field measurements
- mobile service with digital camera (IEEE 1394, USB 2.0) 8bit/ 10bit/ 12bit/ 14bit/ 16bit systems



The menu-driven software package 'BeamLux' (Windows 2000 or Windows XP) is a powerful 32-bit multitasking application for real-time profile analysis and characterization of beam parameters according to current ISO standards ISO 13694 and ISO 11146. In combination with several digital and analog MetroLux camera-systems almost any light source can be tested, in the wide spectral range (EUV-VUV-UV-VIS-NIR).



VARIOUS MODES FOR RECORDING OF TWO-DIMENSIONAL PROFILES

Simple and efficient control of profile acquisition and display, including:

- Pulse Synchronization
 - grab mode for continuous radiation
 - continuous trigger mode (user selectable number of pulses, repetition rates up to 10 kHz)
 - burst mode (accomplishing arbitrary composition of pulse trains with single pulse resolution of up to 10 kHz)
 - fast profile averaging/sequencing/ summation over specified number of pulses (repetition rates up to 10 kHz)
 - snap (freeze) mode

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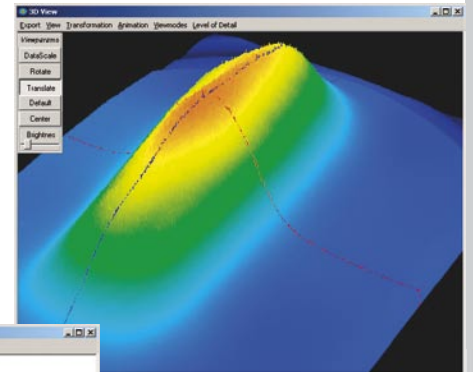
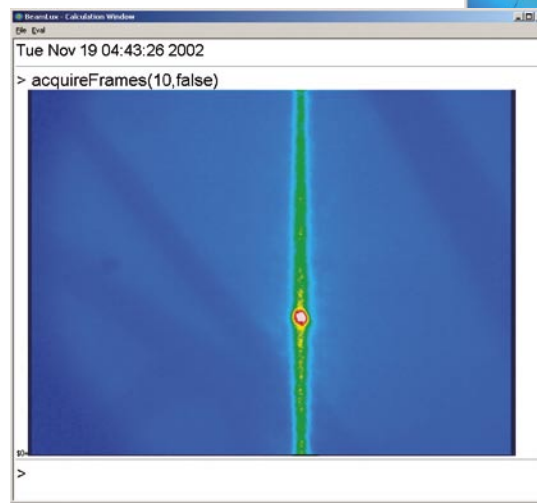
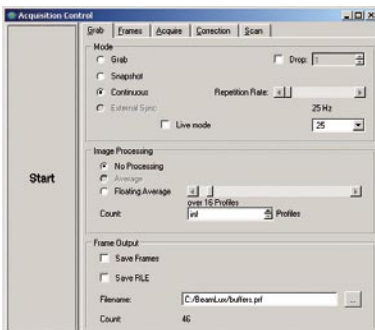
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CHARACTERIZATION OF BEAM PARAMETERS

Following currently proposed ISO standards, a variety of different laser beam parameters are computed in real time from the acquired profiles for comprehensive beam characterization:

- beam width (horizontal/ vertical, using '2nd moment' or 'moving slit' method)
- center of gravity (centroid)
- pointing stability
- azimuth angle (for rotated beams)
- maximum energy/ power (energy content)
- plateau uniformity
- edge steepness
- asymmetry
- effective irradiation area
- possibility for calibration of:
 - absolute energy/ power densities
 - total energy/ power



In addition, the 'Laser Beam Profiler' software offers a number of sophisticated software and hardware features, as there are:

- Software controlled shutter and gain
- powerful features for real time cross-sectioning (horizontal and vertical) profile fit functions, incl. Gaussian / Super Gaussian/ top-hat profiles; history function allowing diagnostics of laser energy stability
- 3D graphics with selectable resolution and pseudo-colors
- numerous color palettes, including analytic and dynamic pallets, adapting to the current profile – during acquisition
- optional color palette and profile scaling (in mm or pixel)
- comprehensive "zoom" mode 'zoomed' profile acquisition; simple movement of zoom area by mouse click; 3D plot in zoom area
- powerful 2D image arithmetic (ADD, SUB, MULT, DIV, EXP, LOG etc.) for complex evaluations on the basis of two separate profiles (e.g. for comparison of actual and reference profiles)
- automatic "true" background correction (either precise constant background or subtraction of "dark" images)
- "preview" of profiles stored on disk in "profile open" routine
- storage of more than 100 profiles in RAM (i.e. fast access to stored data)

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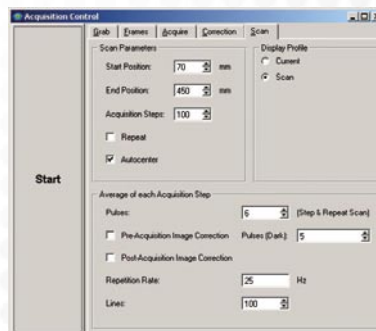
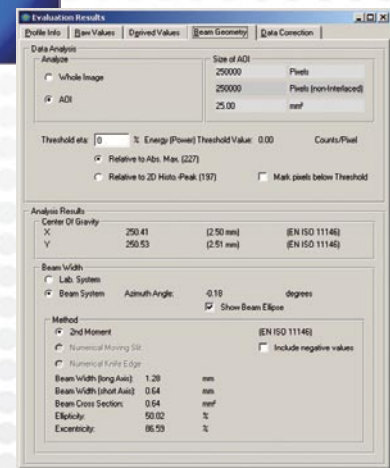
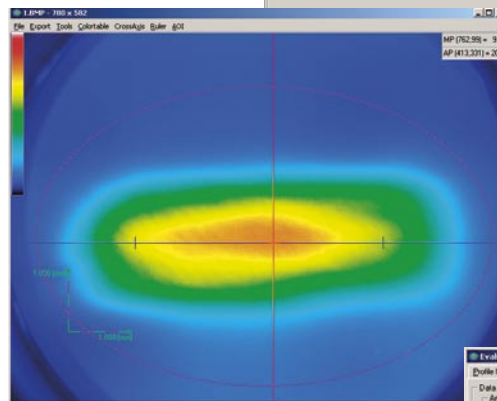
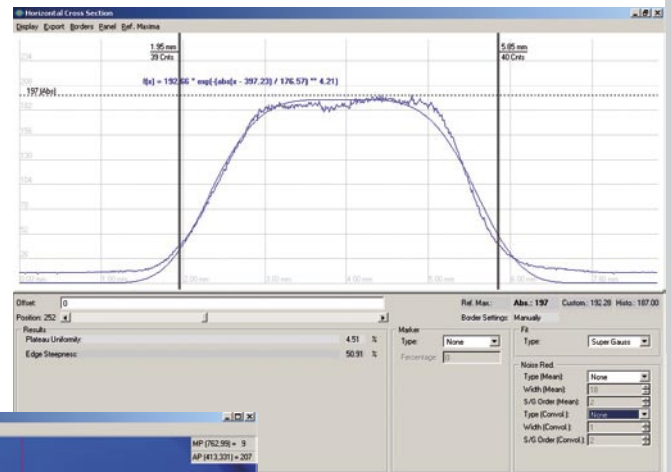
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CHARACTERIZATION OF BEAM PARAMETERS (continuation)

- export data, plots and profiles into Windows clipboard for evaluation with alternative programs; storage of beam profiles in bitmaps, profile and ASCII formats
- procedures
- modular interface concept for peripheral devices
 - optional stepper motor driven variable attenuators (to be controlled from main menu)
 - module for stepper motors
 - module for Laser Synchron Device (LSD)
 - module for M^2
 - module for stepper motors in combination with motorized translation stage
- simple, intuitive operation, incl. 'help' messages
- pass/ fail function visible and acoustical information and output via RS 232
- timer function
- remote function
- macro command language for complex measuring tasks and user defined
- LabView interface
- customized modifications
- user friendly



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