



Laser technology | Optics | Physical science | Technology Offer

Reliable quantification of the cw background of a pulsed laser: BIRD – Background-to-Impulse Ratio Detector

Field of application

Today, the use of pulsed laser systems is an absolute standard in many different application areas. These include industrial production (e.g. structuring of photovoltaic wafers), medical technology, scientific and industrial measurement technology, as well as newly developed areas such as LIDAR sensor technology, with its own wide range of applications.

At the Institut für Strahlwerkzeuge at the University of Stuttgart, a measuring device has been developed to measure the share of the continuous wave's power in the total pulsed laser power. This information is very useful for those developing pulsed lasers or monitoring them in operation.

State of the art

The presence of undefined noise always reduces the quality of a system. Conventional methods do not allow for a quantitative determination of the cw power share. Up to now, the cw background has only been inferred indirectly and purely qualitatively, e.g. via the spectrum. All conventional methods could only be used with restrictions.

Innovation

The newly developed 'Background-to-Impulse Ratio Detector' (BIRD) system uses a saturable element (SE) with a large modulation depth. This ensures intensity-dependent laser beam feedback. The calculation of the share of the cw background or background noise in the total system power is thus based on comparative measurements before and after the laser beam passes via the SE. For this purpose, the beam is split into partial beams of the same power. If the total power is already known, no beam splitting is required and the design or implementation is even simpler. The system can be used for a wide performance range and can easily be integrated into existing systems.

Patent portfolio

A German patent (DE102015003370 B4) has been granted, a patent application in the USA is pending (US2018/0066983 A1).

Your benefits at a glance

- ✓ Reliable quantification of the power share of cw background or background noise
- ✓ Can be used in laser development and for operational monitoring
- ✓ Can also be integrated into existing systems

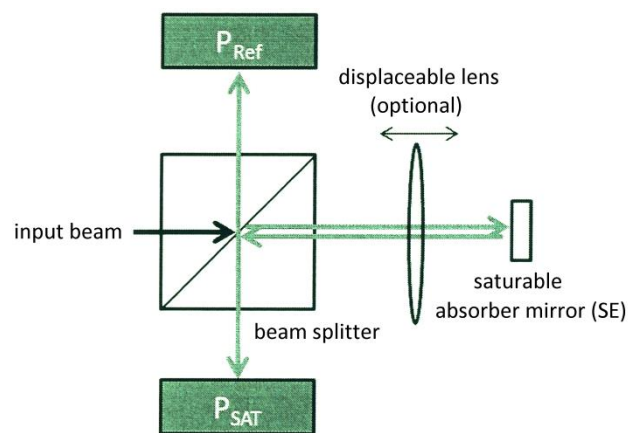


Figure: Measurement setup with beam splitting and absorber mirror as SE element [IFSW, Universität Stuttgart].

Technology transfer

Technologie-Lizenz-Büro GmbH is responsible for the exploitation of this technology and assists companies in obtaining licenses.

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