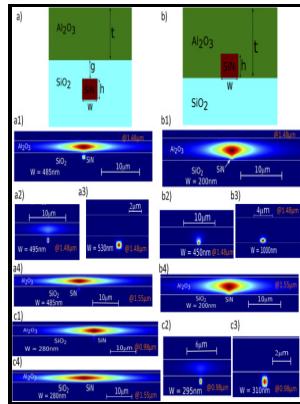


Field guide to laser pulse generation

SPIE Press - Field Guide to Laser Pulse Generation : Rudiger Paschotta: localize-img.justmote.me.au: Books



Description: -

Pulse techniques (Electronics)

Pulse generators

Laser pulses, UltrashortField guide to laser pulse generation

-Field guide to laser pulse generation

Notes: Includes bibliographical references and index.

This edition was published in 2008



Filesize: 26.104 MB

Tags: #Field #guide #to #laser #pulse #generation #[electronic #resource] #/ #Rudiger #Paschotta

Field Guide to Laser Pulse Generation

Well, if you are reading this article about how to calculate laser pulse energy, you probably need to do it and thus know better than me why this is important for you! The combination of a small spot size with a short pulse duration leads to very high optical intensities, even if the pulse energy is moderate. Pulse characterization is also covered, along with the physical aspects and various technical limitations. For example, a Gentec-EO laser power meter can be used to measure average power.

Field Guide to Laser Pulse Generation

In addition, the average power can vary significantly through time with the aging of the laser.

Field Guide to Laser Pulse Generation : Rudiger Paschotta: localize-img.justmote.me.au: Books

Field Guide to Laser Pulse Generation by Rüdiger Paschotta

Same thing for the repetition rate. If you would like to find the best Gentec-EO joulemeter for your needs, you can contact us directly or visit our page. They comprise a dominant part of the overall laser market and are quickly replacing gas lasers for many applications due to their desirable characteristics such as good reliability and robustness, a high level of safety.

Field Guide to Laser Pulse Generation : Rudiger Paschotta: localize-img.justmote.me.au: Books

For example, ultraprecise optical clocks exploit this feature. Your laser does not necessarily output the exact average power that is written in its specification sheet. The laser pulse energy calculation explained, with numerical examples If you are trying to calculate the amount of energy that is contained in your laser pulses, you are either working with a pulsed laser and want to know the energy in each individual pulse, or with a CW or pulsed laser that is fired for a known and finite amount of time.

How to calculate laser pulse energy

The book covers high-power gas, chemical, and free-electron lasers and then discusses semiconductor diode. Inhomogeneous Saturation 9 Spatial Hole Burning 10 Threshold and Slope Efficiency 11 Power Efficiency 13 Amplified Spontaneous Emission 14 Characteristics of Laser Light 15 Laser Beams 16 Temporal Coherence of Laser Radiation 16 Spatial Coherence 17 18 Laser Beam Quality 20 Brightness or Radiance of Laser Beams 21 Optical Resonators 22 Basic Structure of an Optical Resonator 22 Resonator Modes 23 Resonance Frequencies 24 Bandwidth and Finesse of a Resonator 25 Stability Zones of a Resonator 26 Unstable Resonators 27 Resonator Design 28 Waveguides 29 Principle of Waveguiding 29 30 Optical Fibers 31 32 Semiconductor Lasers 33 33 34 Low-Power Edge-Emitting Laser Diodes 35 External-Cavity Diode Lasers 36 Broad-Area Laser Diodes 37 Diode Bars 38 Diode Stacks 39 40 41 Fiber-Coupled Diode Lasers 42 44 Solid-State Bulk Lasers 45 Solid-State Bulk Lasers 45 Rare-Earth-Doped Gain Media 46 Transition-Metal-Doped Gain Media 47 Properties of Host Crystals 48 Effective Cross Sections 49 Phonon Effects in Solid-State Gain Media 50 Quasi-Three-Level Laser Transitions 51 Lamp Pumping vs. Contents: Glossary of symbols -- Introduction to optical pulses -- Optical pulses in the time domain -- Optical pulses in the frequency domain -- Bandwidth-limited pulses -- Pulse trains and frequency combs -- Carrier-envelope offset -- Overview of laser sources for optical pulses -- Q switching -- Active and passive Q switching -- Essentials of laser dynamics -- Pumping the gain medium -- Dynamics of active Q switching -- Achievable pulse energy -- Pulse duration and buildup time -- Influence of pulse repetition rate -- Dynamics of passive Q switching -- Pulse duration and pulse energy -- Saturable absorbers for Q switching -- Influence of pump fluctuations -- Mode beating in multimode lasers -- Q-Switched solid-State bulk lasers -- Q-Switched microchip lasers -- Q-Switched fiber lasers -- Multiple pulsing and instabilities -- Cavity dumping -- Gain switching -- Comparison with other techniques -- Mode locking -- Active mode locking -- Passive mode locking -- Mode locking with fast saturable absorbers -- Mode locking with slow saturable absorbers -- Chromatic dispersion -- Dispersive pulse broadening -- Effect of dispersion in mode-locked lasers -- Dispersion compensation -- The Kerr nonlinearity -- Self-phase modulation -- Self-phase modulation and chromatic dispersion -- Optical solitons -- Quasi-Soliton pulses in laser resonators.

Field Guide to Laser Pulse Generation

The high spatial coherence of such beams allows laser pulses to focus to very small spots, sometimes with areas below $1 \mu\text{m}^2$. Pulse characterization is also covered, along with the physical aspects and various technical limitations. Серия: МИР физики и техники.

Related Books

- [War of 1812.](#)
- [Four questions answered.](#)
- [Book of abstracts - scientific research outlook in the Arab world and the new millennium, science &](#)
- [Ancestral voices - the selected prose of John Hewitt ; edited by Tom Clyde.](#)
- [Fuqing xian zhi](#)