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**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

GB/T 15313-2008

Replacing GB/T 15313-1994

Terminology for laser

激光术语

(English Translation)

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Foreword

This revised standard adopts the International Standard ISO 11145:2006 "terms and symbols and laser-related equipment" (in English).

This standard is based on ISO 11145:2006 redrafted.

This standard and ISO 11145:2006 compared, there is a technical difference.

--- Of ISO 11145:2006 Content "laser" and "laser" were enriched and improved. "Laser" all terms except mining Defined by international standards, the increase in the nature of the content of stimulated emission and laser coherence, monochromaticity and directivity. "Laser" surgery in addition to the language used in all international standard definitions, classification increased content lasers, laser rich understanding of the formation of relationships.

--- In addition to the use of ISO 11145:2006 in all terms and symbols, the increase in the number of ISO 11145:2006 is not the terminology.

The term of the order of the articles were re-arranged. For the use of ISO 11145:2006 term, in terms of terminology behind are injection Clear corresponding ISO standard terms number.

This standard replaces GB/T 15313-1994 "Laser term." this standard compared with GB/T 15313-1994, the main changes are as follows.

--- Former national standards and ISO 11145:2006 standard the same terms, in accordance with ISO 11145:2006 has been modified to define and finishing.

--- The original criteria for priority supplements. a semiconductor laser (quantum well lasers, quantum dot lasers, quantum wire lasers; vertical cavity surface Emitting device; a single, stacked, semiconductor laser; direct pumping technology); fiber lasers (fiber amplifiers, fiber optic Gate; double-clad fiber cladding pumped; photonic crystals, photonic crystal fibers); new materials and devices (erbium-doped glass; ceramic laser material Materials, ceramic laser; titanium gemstones, titanium sapphire laser; yttrium vanadate, potassium gadolinium tungstate; diffuse reflection condenser cavity); strong laser (heat capacity the term laser

beam combining laser technology) and other new developments and terminology related to materials, devices and technology; laser.

--- 2.5 "laser equipment and applications" for newly added part, increasing the laser processing, laser medical treatment, laser measurement, laser printing and the term laser application information and other aspects of this part of the wide application of the term, an urgent need to clarify the technical content and the consistency.

--- Standard and ISO 11145:2006 corresponding symbols and units, identical with ISO 11145:2006, still other symbols and units Consistent with the previous version of the standard, so that the use of symbols and units for continuity.

--- International standard terminology laser [ISO 11145:30] under the premise of equal use to increase the content of laser classification, so A more comprehensive definition of the term and in-depth.

--- Original standard terms with definitions of some terms used, the technical content of the application has been re-defined, the definitions of terms deepen skills Surgery connotation.

--- The new amendments and supplements to increase the term 121, modify the terms 120, the unmodified term 38.

The standard proposed by China North Industries Group Corporation.

The standard by the China North Industries Group Corporation.

This standard was drafted. China Ordnance Industry Standardization Institute, the weapons industry second nine research institutes, state-run fifth three eight plants, Beijing University of Technology.

1 Scope

This standard specifies the basic laser, laser technology, laser components and materials, lasers and laser devices and applications of terms and symbols and units.

This standard applies to research, production and teaching.

2.1 Laser base

2.1.1

Generated by a laser, the wavelength of coherent electromagnetic radiation until 1mm. It is made by stimulated emission of particulate matter and amplified, with good Monochromatic, coherence and direction.

[ISO 11145:2006, definitions 3.32] 2.1.2 an active particle transition from the high-energy state to a lower energy state and release a photon phenomenon.

2.1.3

Activate particle transition from the high-energy state to a lower energy state without photons release phenomenon.

2.1.4

Laser photon energy and contribute to the inversion of the difference between the pump photon energy.

2.1.5

The optical power per unit area to unit solid angle of radiation in the direction of the laser beam output. Steradian watts per square meter ($\text{Wm}^{-2}\text{sr}^{-1}$).

2.1.6

Particles in high energy level by a certain probability of spontaneous transition to a low energy level, while emitting a photon phenomenon.

2.1.7

In external radiation field, the particles in high energy level when the transition to a lower energy level, emitting the incident photon characteristics (frequency, direction and partial Vibration, etc.) are identical radiation phenomena.

2.1.8

When applied in the field of radiation effects at low levels of particle transition to the high energy level to absorb an energy equal to the energy difference between two energy levels of light Child transition to the high energy level of the phenomenon.

Stimulated absorption and stimulated emission processes are collectively referred to as the two induced transition.