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Optics and photonics — Diffractive optics — Vocabulary

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Foreword

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This document was prepared by Technical Committee ISO/TC 172, *Optics and Photonics*, Subcommittee SC 9, *Laser and electro-optical systems*.

This second edition cancels and replaces the first edition (ISO 15902:2004), of which it constitutes a minor revision. It also incorporates the Technical Corrigendum ISO 15902:2004/Cor 1:2005.

The changes compared to the previous edition are as follows:

— in 3.3.3.4, an explanation on the factor has been added in a note to entry;

— in 3.4.3.4, the sign has been corrected;

— other editorial changes have been made.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

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Introduction

The term diffractive optical element is used for those optical elements which convert an input wavefront to a predetermined output wavefront (or wavefronts) in free space by means of the phenomenon of diffraction. There has been a rapid increase in the use of diffractive optical elements, especially in the field of optical data storage, and they are essential components in optical and electro-optical systems. They are used in a wide variety of applications.

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Optics and photonics — Diffractive optics — Vocabulary

1 Scope

This document defines the basic terms for diffractive optical elements for free space propagation. The purpose of this document is to provide an agreed-upon common terminology that reduces ambiguity and misunderstanding and thereby aid in the development of the field of diffractive optics.

2 Normative references

There are no normative references in this document.

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at http://www.iso.org/obp

— IEC Electropedia: available at http://www.electropedia.org/

3.1 Diffractive optics technologies

3.1.1
diffractive optics
optical technology based on the phenomenon of the diffraction of optical radiation

3.1.2
binary optics
diffractive optics technology whose optical components have a quantized surface structure in height

Note 1 to entry: The word binary originally means a two-step structure in cross section, however, a staircase structure in cross section is usually referred to as binary as well, regardless of the number of the steps. This incorrect wording originates from the fact that these structures are fabricated using a mask lithography technique.

Note 2 to entry: See 3.3.2.8 and 3.3.2.9.

3.1.3
holographic optics
diffractive optics technology that uses holograms as optical elements for transforming an incident wavefront into a specific wavefront or wavefronts

3.2 Diffractive optical elements and their types

3.2.1
diffractive optical element
DOE
optical element for which the phenomenon of the diffraction of optical radiation is the operating principle, usually characterized in terms of its periodic spatial structure

3.2.2
amplitude diffractive optical element
optical element which utilizes the diffraction created by its periodic spatial amplitude modulation

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