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Ophthalmic optics and instruments — Reporting aberrations of the human eye

Optique et instruments ophtalmiques — Méthodes de présentation des aberrations de l'œil humain

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Foreword

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ISO 24157 was prepared by Technical Committee ISO/TC 172, *Optics and photonics*, Subcommittee SC 7, *Ophthalmic optics and instruments*.

Ophthalmic optics and instruments — Reporting aberrations of the human eye

1 Scope

This International Standard specifies standardized methods for reporting aberrations of the human eye.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 8429, *Optics and optical instruments — Ophthalmology — Graduated dial scale*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply. Symbols used are summarized in Table 1.

3.1
line of sight
line from the point of interest in object space to the centre of the entrance pupil of the eye and continuing from the centre of the exit pupil to the retinal point of fixation (generally the foveola)

3.2
Zernike polynomial function
one of a complete set of functions defined and orthogonal over the unit circle, the product of three terms, a normalization term, a radial term and a meridional term, parameterized by a dimensionless radial parameter, ρ, and a dimensionless meridional parameter, θ, designated by a non-negative radial integer index, n, and a signed meridional index, m, and given by the equation

$$Z_n^m = N_n^m R_n^{|m|}(\rho) M(m\theta) \tag{1}$$

where

N_n^m is the normalization term;

$R_n^{|m|}$ is the radial term;

$M(m\theta)$ is the meridional term;

the parameter ρ is a real number continuous over its range of 0 to 1,0;

the parameter θ is a real number continuous over its range of 0 to 2π.

NOTE   For a given value of radial index n, the meridional index m may only take the values $-n$, $-n+2$, …, $n-2$ and n.