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Optics and photonics — Preparation of drawings for optical elements and systems —

Part 14: Wavefront deformation tolerance

*Optique et photonique — Préparation des dessins pour éléments et
systèmes optiques —*

Partie 14: Tolérance de déformation du front d'onde



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ISO copyright office
CP 401 • Ch. de Blandonnet 8
CH-1214 Vernier, Geneva
Phone: +41 22 749 01 11
Fax: +41 22 749 09 47
Email: copyright@iso.org
Website: www.iso.org

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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This document was prepared by Technical Committee ISO/TC 172, *Optics and photonics*, Subcommittee SC 1, *Fundamental standards*.

This third edition cancels and replaces the second edition (ISO 10110-14:2007), which has been technically revised. The main changes compared to the previous edition are as follows:

- this document has been adjusted to ISO 10110-5 which includes the use of general surfaces.
- a new subclause “Additional forms” has been added as 5.2.2, which includes “PV and robust PV wavefront deviation” and “Wavefront deviation described by Zernike coefficients”.
- examples have been added in [Clause 6](#).
- subclause 4.5 has been deleted.

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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

This document makes it possible to specify a functional tolerance for the performance (expressed as single-pass wavefront deformation) of an optical system, which may have optical power or contain powered optical elements. This tolerance therefore includes the effect of surface form deformations, inhomogeneities, and possible interactions among the various individual errors.

Optical elements are often tested in a “double-pass” configuration, in which the wavefront passes through or, in the case of reflective optics, reflects from the element under test twice, as shown in ISO/TR 14999-1:2005, Figure 18.