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Foreword

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This second edition cancels and replaces the first edition (ISO 9039:1994) which has been technically revised.

Introduction

Generally, the function of rotationally symmetric optical systems is to form an image that is geometrically similar to the object, except for some particular systems, such as fish-eye lenses and eyepieces, where this condition is deliberately not maintained. Ideally, this function is accomplished according to the geometry of perspective projection. Departures from the ideal image geometry are called distortion. The distortion is a position-dependent quantity which generally has a vectorial character. In a given image plane (which may also lie at infinity), this vector, representing the difference between theoretical and real image position, has a radial and a tangential component. In optical systems, the tangential component is basically conditioned by imperfect rotational symmetry. The systems manufactured in accordance with the present state of the art have a negligible tangential distortion. A tangential component of the distortion appears, however, as primary aberration in the case of electromagnetically focused electro-optical systems. This International Standard deals only with the radial distortion. For special systems, e.g. certain electro-optical systems, an expansion may become necessary to include vectorial representation.