Field Guide to

Interferometric Optical Testing

Eric P. Goodwin
James C. Wyant

SPIE Field Guides
Volume FG10

John E. Greivenkamp, Series Editor

SPIE PRESS
Bellingham, Washington USA
Library of Congress Cataloging-in-Publication Data

Goodwin, Eric P.
Field guide to interferometric optical testing / Eric P. Goodwin & James C. Wyant.
   p. cm. -- (The field guide series ; 10)
Includes bibliographical references and index.
ISBN 0-8194-6510-0

TS514.G66 2004
535'.470287--dc22
2006024169

Published by

SPIE—The International Society for Optical Engineering
P.O. Box 10
Bellingham, Washington  98227-0010 USA
Phone: +1 360 676 3290
Fax: +1 360 647 1445
Email: spie@spie.org
Web: http://spie.org

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Printed in the United States of America.
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Optical Sciences Center
The University of Arizona
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Field Guide to Interferometric Optical Testing

The material covered in the *Field Guide to Interferometric Optical Testing* is derived from a course taught by Dr. Wyant at the College of Optical Sciences at the University of Arizona. The material has evolved over the years as the underlying technologies and techniques have changed. This text is meant as a reference of interferometric principles and methods for the practicing engineer.

Eric Goodwin dedicates this *Field Guide* to his wife, Sam, and their daughter, Ryan.

James Wyant dedicates this *Field Guide* to the memory of Louise.

Eric P. Goodwin and James C. Wyant
College of Optical Sciences
University of Arizona
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Glossary

Frequently used variables and symbols:

\( a \)  
Average phase shift between frames

\( A \)  
Amplitude

\( A_n \)  
Aspheric surface coefficients

\( b \)  
Number of bits for quantization error

\( B \)  
Obscuration ratio

\( c \)  
Speed of light

\( C \)  
Moiré fringe spacing

\( C \)  
Curvature

\( d \)  
Distance, displacement

\( D \)  
Diameter

\( D_{HS} \)  
Diameter of Hindle Sphere

\( f \)  
Focal length

\( f \)  
Spatial frequency

\( f/# \)  
F-number

\( F \)  
Focal point

\( F \)  
Coefficient of finesse

\( g[\theta'] \)  
Zernike angular component

\( G \)  
G-factor

\( h \)  
Height

\( H \)  
Normalized field height

\( i \)  
Step number, frame number

\( I \)  
Irradiance

\( L_c \)  
Coherence length

\( m \)  
Diffraction order or fringe order

\( m \)  
Fresnel zone plate zone number

\( m \)  
Transverse or lateral magnification

\( n \)  
Index of refraction

\( n_e \)  
Extraordinary index, uniaxial crystal

\( n_o \)  
Ordinary index, uniaxial crystal

\( N \)  
Number of algorithm steps

\( N \)  
Integer number of \( 2\pi \)

NA  
Numerical aperture

OPD  
Optical path difference

OPL  
Optical path length

\( p \)  
p-polarization state

\( r \)  
Non-normalized radial coordinate

\( r_m \)  
Radius of \( m \)th bright fringe

\( r_p \)  
Pupil radius
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