

Look for the units of Planck's constant on page 393.

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## Holographic Interferometry Principles and Methods

Edited by P. K. Rastogi  
Springer, New York, 1994. 328 pp.  
\$65.00 hc ISBN 0-387-57354-2

Aside from the steady flow of conference proceedings, it has been a while since the publication of the last major book on holographic interferometry. As a codiscoverer of this field, I have had the good fortune to be asked to review or contribute to most of the books in this area, and my collection now includes at least eight books on the subject published between 1974 and 1990, including the timeless classic *Holographic Interferometry* by C.M. Vest (Wiley Interscience, 1979). Even if I haven't missed any, which I'm sure I have, you might not expect me to be enthusiastic about yet another book in this field, especially one that is a compilation of chapters by separate authors. If so, you would be wrong, because these six authors and their editor Pramod K. Rastogi (who contributes a seventh article) have made *Holographic Interferometry Principles and Methods* a worthwhile book.

P. Hariharan's chapter, Basic Principles, is a good discussion of the hologram and its function in holographic interferometry and includes a basic discussion of the interference phenomena that make up this field. Ryszard J. Pryputniewicz's chapter, Quantitative Determination of Displacements of Strains from Holograms, for me was *déjà vu* because of the large amount of work we have done together. The author presents an elaborate mathematical treatment of fringe formation in holographic interferometry, including solutions for displacements and strains formulated in matrix notation, and also includes a section on modern work in TV holography. René Dändliker's Two-Reference-Beam Holographic Interferometry is a solid treatment of heterodyne interferometry as applied to holographic interferometry and includes some remarkable applications. Katherine Creath's Phase-Shifting Holographic Interferometry is an excellent treatment of phase-step interferometry and electronic holography (also called electronic speckle-pattern interferometry). Thomas Kreis, in his

Computer-Aided Evaluation of Holographic Interferograms, presents a very thorough treatment of computer methods for interferogram analysis. In his Techniques to Measure Displacement Derivations and Surface Shapes, Rastogi presents an extended potpourri of measurement techniques. And C.S. Vikram's Study of Vibrations closes the book with a comprehensive discussion of vibration meas-

urement by holographic techniques.

As would be expected of a multi-author book, this volume appears to be aimed at the prospective user and is less a potential college text than is Vest's *Holographic Interferometry*. What is surprising is the extent to which the chapters complement one another to present a comprehensive picture of the major developments in this field over the past 30 years.

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Some phenomena are discussed several times in successive chapters, as expected, because a good deal of material is common to the work of different authors; however, the repetition is not a bad idea. The chapters by Dändliker, Creath and Kreis are particularly useful because of the extent to which electronic processing has invaded interferometry and revolutionized the field.

The only chapter I found disappointing was the one by Pryput-

niewicz. This material stands between the extremely mathematical tensor theory published in 1979 by W. Schumann and M. Dubas (Springer Series in Optical Sciences Volume 16) and the more algebraic treatments found in the rest of this book. I felt, in reading this material, a strong sense of regret that it has never achieved the popularity I had hoped for it when we first published it. Perhaps its inclusion in this excellent book will help. I am keenly

aware of the desperate need to approach this material from a fresh point of view, to reevaluate it, to cast it in a different format so that the general user can finally understand it and be motivated to use it. Unfortunately, that is not what is presented here; the same old equations dance before your eyes until you nod off to sleep. Even the newer material about electronic holography is somewhat out-of-date. It is duplicated to advantage in the chapters by Creath and Vikram.

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