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Nota di contenuto	Investigation of modulated sparse aperture imaging systems (MSAIS) and their applications on speckle images -- Investigation of hexagonal sparse apertures surrounded by a rectangular annulus -- Design of some heterogeneous apertures and computation of the resolution -- Study of Cascaded Black–Quadratic Aperture (CBQA) -- Design of Improved Apertures and their application in microscopy -- Design of a STRAUBEL filter in a circular aperture and its application on a confocal laser scanning microscope (CLSM) -- Investigation of modulated cardiac apertures and their applications in confocal laser scanning microscope.
Sommario/riassunto	This book explores advanced image processing techniques for systems with deformed and sparse apertures. Building on the author's recent research, this book is designed for graduate students and researchers in the fields of optical sciences and optical engineering. The book begins with a unique investigation into aperture shapes inspired by

coronavirus (COVID-19) imagery, followed by an analysis of cardiac-shaped apertures and their integration into confocal laser systems. Subsequent chapters look at the design and resolution analysis of heterogeneous apertures, including cascaded black-linear and linear-conic configurations, as well as hexagonal geometries. The book also introduces the Straubel filter within circular apertures and its impact on confocal imaging performance. Later chapters revisit the coronavirus model in optical contexts and explore triangular aperture models applied to speckle photography. The final chapter presents a comprehensive study of Modulated Sparse Aperture Imaging Systems (MSAIS) and their effectiveness in enhancing speckle image quality. With a blend of theoretical modeling, practical design, and application-driven insights, this book offers a valuable contribution to the evolving field of computational optics and aperture engineering.