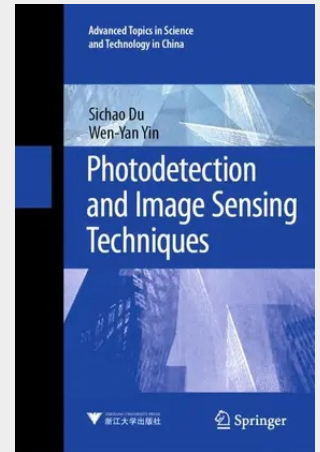


Photodetection and Image Sensing Techniques

This book provides a comprehensive and systematic introduction to optoelectronic imaging techniques. Starting from the basis of photoelectric detection technology, it thoroughly discusses the basic knowledge of radiation measurement and light metrics, the basic principles of semiconductors, and the basic physical effects and characteristic parameters of photoelectric detection devices. It further introduces the types and characteristics of light sources commonly used in photoelectric detection. This lays a solid foundation for readers to learn the single photon detector, single photon imaging technology, and spectral imaging technology. This book also details the working principle, classification characteristics, and performance evaluation method of single-photon detectors, as well as the applications in low-light detection and quantum communication. Spectral imaging technology and two-dimensional imaging technology are also explained in terms of basic principles, system classification and characteristics.

It also focuses on the practical applications of photoelectric detection technology in various fields, including remote sensing, atomic absorption spectroscopy analysis, mechanical quantity detection, etc., showing the wide application and great potential of photoelectric detection technology through specific cases. The frontiers and development trends of optoelectronic imaging technology are discussed, revealing the future development direction and challenges in this field for the readers.

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