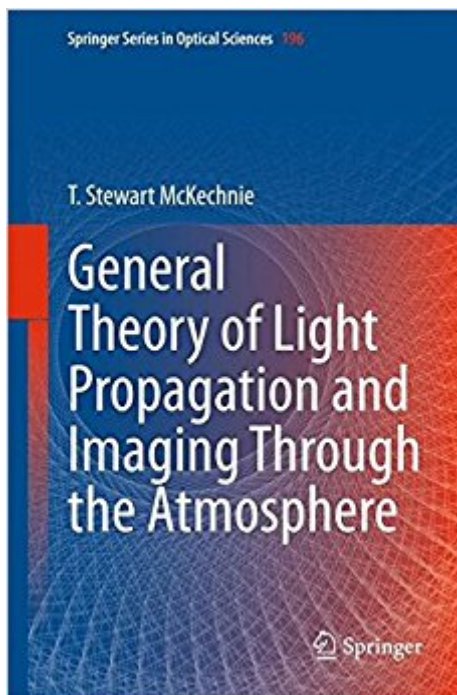




Ebook Directory
the best source of ebook

The book was found

General Theory Of Light Propagation And Imaging Through The Atmosphere (Springer Series In Optical Sciences)



Synopsis

This book lays out a new, general theory of light propagation and imaging through Earth's turbulent atmosphere. Current theory is based on the "now widely doubted" assumption of Kolmogorov turbulence. The new theory is based on a generalized atmosphere, the turbulence characteristics of which can be established, as needed, from readily measurable properties of point-object, or star, images. The pessimistic resolution predictions of Kolmogorov theory led to lax optical tolerance prescriptions for large ground-based astronomical telescopes which were widely adhered to in the 1970s and 1980s. Around 1990, however, it became clear that much better resolution was actually possible, and Kolmogorov tolerance prescriptions were promptly abandoned. Most large telescopes built before 1990 have had their optics upgraded (e.g., the UKIRT instrument) and now achieve, without adaptive optics (AO), almost an order of magnitude better resolution than before. As well as providing a more comprehensive and precise understanding of imaging through the atmosphere with large telescopes (both with and without AO), the new general theory also finds applications in the areas of laser communications and high-energy laser beam propagation.

Book Information

Series: Springer Series in Optical Sciences (Book 196)

Hardcover: 624 pages

Publisher: Springer; 1st ed. 2016 edition (August 6, 2015)

Language: English

ISBN-10: 3319182080

ISBN-13: 978-3319182087

Product Dimensions: 6.1 x 1.4 x 9.2 inches

Shipping Weight: 4.8 ounces (View shipping rates and policies)

Average Customer Review: Be the first to review this item

Best Sellers Rank: #889,961 in Books (See Top 100 in Books) #123 in Books > Engineering & Transportation > Engineering > Reference > Measurements #256 in Books > Science & Math > Physics > Electromagnetism > Electricity #611 in Books > Science & Math > Physics > Mathematical Physics

Customer Reviews

This book lays out a new, general theory of light propagation and imaging through Earth's turbulent atmosphere. Current theory is based on the "now widely doubted" assumption of

Kolmogorov turbulence. The new theory is based on a generalized atmosphere, the turbulence characteristics of which can be established, as needed, from readily measurable properties of point-object, or star, images. The pessimistic resolution predictions of Kolmogorov theory led to lax optical tolerance prescriptions for large ground-based astronomical telescopes which were widely adhered to in the 1970s and 1980s. Around 1990, however, it became clear that much better resolution was actually possible, and Kolmogorov tolerance prescriptions were promptly abandoned. Most large telescopes built before 1990 have had their optics upgraded (e.g., the UKIRT instrument) and now achieve, without adaptive optics (AO), almost an order of magnitude better resolution than before. As well as providing a more comprehensive and precise understanding of imaging through the atmosphere with large telescopes (both with and without AO), the new general theory also finds applications in the areas of laser communications and high-energy laser beam propagation.

T. Stewart McKechnie, BS (Hons), MS, PhD, studied at Edinburgh University and Imperial College London, where he subsequently undertook postdoctoral research and lectured in Optics. After working at Loughborough University (UK), Dr. McKechnie went on to become a Consultant in Optics and program leader for optical system development of light valve and CRT-based projection TV systems at North American Philips Laboratories. In 1988 he joined Martin Marietta Corporation, Albuquerque, and in 1989 transferred to Lentec Corporation, where he was responsible for optics support at the Developmental Optics Facility relating to development of optical components for HEL systems. From 1992 to 2003 Dr. McKechnie was an Independent Optics Consultant at McKechnie Optics Research, his clients/projects including ITT Corp, NASA, the ATP Testbed program (formerly HABE), S Systems Corp, Aerotherm Corporation, Imaging Systems Laboratory (Florida Atlantic University) and Sandia National Laboratories. Between 2003 and 2009 he worked at ITT Corporation, Advanced Engineering & Sciences, Albuquerque, New Mexico, as Chief Scientist with responsibility for optical design, modeling, and construction of Light Detection and Ranging (LIDAR) and Laser Detection and Ranging (LADAR) remote sensing systems.

[Download to continue reading...](#)

General Theory of Light Propagation and Imaging Through the Atmosphere (Springer Series in Optical Sciences) Optical Thin Films: User's Handbook (Macmillan Series in Optical and Electro-Optical Engineering) Planting and Establishment of Tropical Trees: Tropical Trees: Propagation and Planting Manuals (Tropical Trees, Propagation and Planting Manuals Series) Transmission Electron Microscopy: Physics of Image Formation and Microanalysis (Springer Series

in Optical Sciences,) Scanning Electron Microscopy: Physics of Image Formation and Microanalysis (Springer Series in Optical Sciences) Single-Mode Fibers: Fundamentals (Springer Series in Optical Sciences) (Volume 57) Monte Carlo Modeling for Electron Microscopy and Microanalysis (Oxford Series in Optical and Imaging Sciences) Adaptive Optics for Astronomical Telescopes (Oxford Series in Optical and Imaging Sciences) Ace General Chemistry I and II (The EASY Guide to Ace General Chemistry I and II): General Chemistry Study Guide, General Chemistry Review The Reference Manual of Woody Plant Propagation: From Seed to Tissue Culture : A Practical Working Guide to the Propagation of over 1100 Species, Va Portal Hypertension: Diagnostic Imaging and Imaging-Guided Therapy (Medical Radiology / Diagnostic Imaging) Structured Light Fields: Applications in Optical Trapping, Manipulation, and Organisation (Springer Theses) Spectral Imaging of the Atmosphere, Volume 82 (International Geophysics) Optical Waves in Crystals: Propagation and Control of Laser Radiation Principles of Optics: Electromagnetic Theory of Propagation, Interference and Diffraction of Light Laser Beam Propagation in Nonlinear Optical Media Site Symmetry in Crystals: Theory and Applications (Springer Series in Solid-State Sciences) Theory of Electron Transport in Semiconductors: A Pathway from Elementary Physics to Nonequilibrium Green Functions (Springer Series in Solid-State Sciences) Handbook of Organic Materials for Optical and (Opto)Electronic Devices: Properties and Applications (Woodhead Publishing Series in Electronic and Optical Materials) Quantum Entanglement in Electron Optics: Generation, Characterization, and Applications (Springer Series on Atomic, Optical, and Plasma Physics)

[Contact Us](#)

[DMCA](#)

[Privacy](#)

[FAQ & Help](#)