

1. Record Nr.	UNINA9910458800803321
Autore	Gbur Greg
Titolo	Mathematical methods for optical physics and engineering / / Greg Gbur [[electronic resource]]
Pubbl/distr/stampa	Cambridge : , : Cambridge University Press, , 2011
ISBN	1-107-21582-X 1-282-93071-0 9786612930713 0-511-77767-1 0-511-91887-9 0-511-91789-9 0-511-91691-4 0-511-91510-1 0-511-91331-1
Descrizione fisica	1 online resource (xvii, 800 pages) : digital, PDF file(s)
Disciplina	535.01/51
Soggetti	Optics - Mathematics
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Title from publisher's bibliographic system (viewed on 05 Oct 2015).
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Vector algebra -- Vector calculus -- Vector calculus in curvilinear coordinate systems -- Matrices and linear algebra -- Advanced matrix techniques and tensors -- Distributions -- Infinite series -- Fourier series -- Complex analysis -- Advanced complex analysis -- Fourier transforms -- Other integral transforms -- Discrete transforms -- Ordinary differential equations -- Partial differential equations -- Bessel functions -- Legendre functions and spherical harmonics -- Orthogonal functions -- Green's functions -- The calculus of variations -- Asymptotic techniques -- Appendix A: the gamma functions -- Appendix B: Hypergeometric functions.
Sommario/riassunto	The first textbook on mathematical methods focusing on techniques for optical science and engineering, this text is ideal for upper division undergraduate and graduate students in optical physics. Containing detailed sections on the basic theory, the textbook places strong emphasis on connecting the abstract mathematical concepts to the

optical systems to which they are applied. It covers many topics which usually only appear in more specialized books, such as Zernike polynomials, wavelet and fractional Fourier transforms, vector spherical harmonics, the z-transform, and the angular spectrum representation. Most chapters end by showing how the techniques covered can be used to solve an optical problem. Essay problems based on research publications and numerous exercises help to further strengthen the connection between the theory and its applications.
