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Ph 325 Wave motion and optics  
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## Books on optics

Many books have been written on the subject of optics. Here is a sampling of what is available sorted by topical emphasis. Books on reserve for spring 2017 are marked with ♠.

### Classic and older texts

♠ M. Born and E. Wolf, *Principles of optics*, 7<sup>th</sup> expanded ed., (Cambridge University Press, Cambridge, 1999).

R. W. Ditchburn, *Light*, (Dover, 2011).

P. Drude, *The theory of optics*, (Dover, New York, 1959).

♠ G. R. Fowles, *Introduction to modern optics*, 2<sup>nd</sup> ed., (Dover, New York, 1975).

♠ F. A. Jenkins and H. E White, *Fundamentals of optics*, 4<sup>th</sup> ed., (McGraw-Hill, New York, 2001).

V. Ronchi, *Optics the science of vision*, (Dover, New York, 1991).

A. Sommerfeld, *Optics*, (Academic Press, New York, 1964).

J. Strong, *Concepts of classical optics*, (W. H. Freeman and company, San Francisco, 1958).

J. Valasek, *Elements of optics*, (McGraw-Hill, New York, 1928).

### Modern texts with broad coverage

S. A. Akhmanov and S. Yu. Nikitin, *Physical optics*, (Clarendon Press, Oxford, 1997).

G. Brooker, *Modern classical optics*, (Oxford University Press, Oxford, 2003).

G. Chartier, *Introduction to optics*, (Springer, New York, 2005).

B. D. Guenther, *Modern Optics*, 2<sup>nd</sup> ed., (Oxford University Press, Oxford, 2015).

E. Hecht, *Optics*, 5<sup>th</sup> ed., (Pearson, 2017).

I. R. Kenyon, *The Light Fantastic: A modern introduction to classical and quantum optics*, 2<sup>nd</sup> ed., (Oxford University Press, Oxford, 2008).

M. V. Klein and T. E. Furtak, *Optics*, 2<sup>nd</sup> ed., (Wiley, New York, 1986).

W. Lauterborn, T. Kurz, and M. Wiesenfeldt, *Coherent optics fundamentals and applications*, 2<sup>nd</sup> ed., (Springer, Berlin, 2003).

A. Lipson, S. G. Lipson, and H. Lipson, *Optical physics*, 4<sup>th</sup> ed., (Cambridge University Press, Cambridge, 2011).

M. Mansuripur, *Classical optics and its applications*, 2<sup>nd</sup> ed., (Cambridge University Press, Cambridge, 2009).

♠ D. Meschede, *Optics light and lasers*, 2<sup>nd</sup> ed., (Wiley-VCH, Weinheim, 2007).

J. R. Meyer-Arendt, *Introduction to classical and modern optics*, 4<sup>th</sup> ed., (Addison-Wesley, 1994).

E. E. Miller and F. L. Roesler, *Applied optics*, (UW Madison, 1999).

♠ J. Peatross and M. Ware, *Physics of light and optics*, (available online at <http://optics.byu.edu/textbook.aspx>, 2015 edition).

F. L. Pedrotti, L. M. Pedrotti, and L. S. Pedrotti, *Introduction to optics*, 3<sup>rd</sup> ed., (Benjamin-Cummings, 2006).

B. E. A. Saleh and M. C. Teich, *Fundamentals of photonics*, 2<sup>nd</sup> ed., (Wiley-Interscience, Hoboken, 2007).

K. K. Sharma, *Optics: Principles and Applications*, (Academic Press, Burlington, 2006).

D. A. Steck, *Classical and Modern Optics*, available online at <http://steck.us/teaching> (revision 1.4.32, 25 June 2012).

F. Träger, Ed., *Springer handbook of lasers and optics*, 2<sup>nd</sup> ed., (Springer, Berlin, 2012).

♠ A. Yariv and P. Yeh, *Photonics Optical electronics for modern communications*, 6<sup>th</sup> ed., (Springer, Berlin, 2000).

♠ M. Young, *Optics and Lasers: Including fibers and optical waveguides*, 5<sup>th</sup> ed., (Springer, Berlin, 2000).

## Geometrical optics and optical design

A. E. Conrady, *Applied optics and optical design, part 1*, (Dover, New York, 1985).

A. E. Conrady and H. Kingslake, *Applied optics and optical design, part 2*, (Dover, New York, 1988).

E. L. Dereniak and T. D. Dereniak, *Geometrical and trigonometric optics*, (Cambridge University Press, Cambridge, 2008).

A. Gerrard and J. M. Burch, *Introduction to matrix methods in optics*, (Dover, Mineola, 1994).

J. F. Nye, *Natural focusing and fine structure of light*, (Institute of Physics Publishing, Bristol, 1999).

D. C. O'Shea, *Elements of modern optical design*, (John Wiley, New York, 1985).

R. R. Shannon, *The art and science of optical design*, (Cambridge University Press, Cambridge, 1997).

## **Fiber, guided wave, integrated, and nano optics**

J. A. Arnaud, *Beam and fiber optics*, (Academic Press, 1976).

R. G. Hunsperger, *Integrated optics: theory and technology*, 3<sup>rd</sup> ed., (Springer, Berlin, 1991).

J. Jahns and S. Helfert, *Introduction to Micro- and Nanooptics*, (Wiley-VCH, Weinheim, 2012).

J. D. Joannopoulos, S. G. Johnson, J. N. Winn, and R. D. Meade, *Photonic crystals Molding the flow of light*, (Princeton University Press, Princeton, 2008).

G. Lifante, *Integrated photonics: fundamentals*, (Wiley, Chichester, 2003).

D. Marcuse, *Theory of dielectric optical waveguides*, 2<sup>nd</sup> ed., (Academic Press, Boston, 1991).

E. G. Neumann, *Single-mode fibers fundamentals*, (Springer, Berlin, 1988).

L. Novotny and B. Hecht, *Principles of Nano-Optics*, 2<sup>nd</sup> ed., (Cambridge University Press, Cambridge, 2012).

M. Skorobogatiy and J. Yang, *Fundamentals of Photonic Crystal Guiding*, (Cambridge University Press, Cambridge, 2009).

A. W. Snyder and J. D. Love, *Optical Waveguide Theory*, (Kluwer Academic Publishers, Dordrecht, 2000).

## **Fourier optics and imaging**

B. B. Baker and E. T. Copson, *The mathematical theory of Huygens' principle*, 3<sup>rd</sup> ed., (Chelsea Publishing, New York, 1987).

J. M. Cowley, *Diffraction physics*, 3<sup>rd</sup> revised ed., (Elsevier, Amsterdam, 1995).

J. D. Gaskill, *Linear systems, Fourier transforms, and optics*, (John Wiley, New York, 1978).

♠ J. W. Goodman, *Introduction to Fourier optics*, 3<sup>rd</sup> ed., (Roberts & Company, Englewood, 2005).

M. Gu, *Advanced optical imaging theory*, (Springer-Verlag, Berlin, 2000).

A. Papoulis, *Systems and transforms with applications in optics*, (McGraw-Hill, 1968).

J. J. Stamnes, *Waves in Focal Regions: Propagation, Diffraction, and Focusing of Light, Sound, and Water Waves*, (Taylor & Francis, New York, 1986).

## **Laser resonator optics and interferometers**

Y. A. Anan'ev, *Laser resonators and the beam divergence problem*, (Adam Hilger, Bristol, 1992).

G. Hernandez, *Fabry-Perot interferometers*, (Cambridge University Press, Cambridge, 1986).

N. Hodgson and H. Weber, *Optical Resonators: Fundamentals, Advanced Concepts, Applications*, 2<sup>nd</sup> ed., (Springer, Berlin, 2005).

W. Koechner, *Solid-state laser engineering*, 6<sup>th</sup> ed., (Springer, 2006).

A. E. Siegman, *Lasers*, (University Science Books, Mill Valley, 1986).

J. M. Vaughan, *The Fabry-Perot Interferometer: History, Theory, Practice and Applications*, (Taylor & Francis, 1989).

## **Light scattering**

C. F. Bohren and D. R. Huffman, *Absorption and scattering of light by small particles*, (Wiley, New York, 1983).

G. Gouesbet and G. Gréhan, *Generalized Lorenz-Mie Theories*, (Springer, Berlin, 2011).

M. Kerker, *The Scattering of Light, and Other Electromagnetic Radiation*, (Academic Press, New York, 1969).

M. I. Mishchenko, L. D. Travis, and A. A. Lacis, *Scattering, absorption, and emission of light by small particles*, (Cambridge University Press, Cambridge, 2002).

M. I. Mishchenko, L. D. Travis, and A. A. Lacis, *Multiple scattering of light by particles, Radiative transfer and coherent backscattering*, (Cambridge University Press, Cambridge, 2006).

A. V. Osipov and S. A. Tretyakov, *Modern electromagnetic scattering theory with applications*, (Wiley, Chichester, 2017).

H. C. van de Hulst, *Light scattering by small particles*, (Dover, New York, 1981).

## **Polarization**

R. M. A. Azzam and N. M. Bashara, *Ellipsometry and polarized light*, (North Holland, Amsterdam, 1989).

C. Brosseau, *Fundamentals of polarized light, A statistical optics approach*, (Wiley, New York, 1998).

D. H. Goldstein, *Polarized light*, 3<sup>rd</sup> ed., (CRC Press, Boca Raton, 2011).

G. P. Können, *Polarized light in nature*, (Cambridge University Press, Cambridge, 1985).

## **Statistical optics and speckle phenomena**

J. W. Goodman, *Statistical optics*, (John Wiley, New York, 1985).

J. W. Goodman, *Speckle phenomena in optics, theory and applications*, (Roberts & Company, Greenwood Village, 2007).

E. L. O'Neill, *Introduction to statistical optics*, (Dover, New York, 1991).

B. Ya' Zel'dovich, A. V. Mamaev, and V. V. Shkunov, *Speckle-wave interactions in application to holography and nonlinear optics*, (CRC Press, Boca Raton, 1995).

## **Specialized topics**

L. Allen, S. M. Barnett, M. J. Padgett, *Optical Angular Momentum*, (IOP Press, Bristol, 2003).

J. Chaves, *Introduction to nonimaging optics*, (CRC Press, Boca Raton, 2008).

A. J. Devaney, *Mathematical foundations of imaging, tomography and wavefield inversion*, (Cambridge University Press, Cambridge, 2012).

J. Glückstad and D. Palima, *Generalized phase contrast: Applications in optics and photonics*, (Springer, Berlin, 2010).

P. C. D. Hobbs, *Building electro-optical systems: making it all work*, 2<sup>nd</sup> ed., (Wiley, Hoboken, 2009).

U. Leonhardt and T. Philbin, *Geometry and light the science of invisibility*, (Dover, New York, 2010).

J. F. Nye, *Natural Focusing and Fine Structure of Light: Caustics and Wave Dislocations*, (IOP Press, Bristol, 1999).

W. T. Welford, *Useful optics*, (University of Chicago Press, Chicago, 1991).