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Nota di contenuto	General principles and characteristics of optical magnetometers / D.F. Jackson Kimball, E.B. Alexandrov and D. Budker -- Quantum noise in atomic magnetometers / M.V. Romalis -- Quantum noise, squeezing, and entanglement in radio-frequency optical magnetometers / K. Jensen and E.S. Polzik -- Mx and Mz magnetometers / E.B. Alexandrov and A.K. Vershovskiy -- Spin-exchange-relaxation-free (serf) magnetometers / I. Savukov and S.J. Seltzer -- Optical magnetometry with modulated light / D.F. Jackson Kimball [and others] -- Microfabricated atomic magnetometers / S. Knappe and J. Kitching -- Optical magnetometry with nitrogen-vacancy centers in diamond / V.M. Acosta [and others] -- Magnetometry with cold atoms / W. Gawlik and J.M. Higbie -- Helium magnetometers / R.E. Slocum, D.D. McGregor and A.W. Brown -- Surface coatings for atomic magnetometry / S.J.

Seltzer, M.-A. Bouchiat and M.V. Balabas -- Magnetic shielding / V.V. Yashchuk, S.-K. Lee and E. Paperno -- Remote detection magnetometry / S.M. Rochester [and others] -- Detection of nuclear magnetic resonance with atomic magnetometers / M.P. Ledbetter [and others] -- Space magnetometry / B. Patton [and others] -- Detection of biomagnetic fields / A. Ben-Amar Baranga, T.G. Walker and R.T. Wakai -- Geophysical applications / M.D. Prouty [and others] -- Tests of fundamental physics with optical magnetometers / D.F. Jackson Kimball, S.K. Lamoreaux and T.E. Chupp -- Nuclear magnetic resonance gyroscopes / E.A. Donley and J. Kitching -- Commercial magnetometers and their application / D.C. Hovde.

Sommario/riassunto

Featuring chapters written by leading experts in magnetometry, this book provides comprehensive coverage of the principles, technology and diverse applications of optical magnetometry, from testing fundamental laws of nature to detecting biomagnetic fields and medical diagnostics. Readers will find a wealth of technical information, from antirelaxation-coating techniques, microfabrication and magnetic shielding to geomagnetic-field measurements, space magnetometry, detection of biomagnetic fields, detection of NMR and MRI signals and rotation sensing. The book includes an original survey of the history of optical magnetometry and a chapter on the commercial use of these technologies. The book is supported by extensive online material, containing historical overviews, derivations, sideline discussion, additional plots and tables, available at www.cambridge.org/9781107010352. As well as introducing graduate students to this field, the book is also a useful reference for researchers in atomic physics.