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Reflectivity and thickness optimisation I.M. Pinto, M. Principe and R. DeSalvo; 13. Beam shaping A. Freise; 14. Gravitational wave detection D. Ottaway and S.D. Penn; 15. High-precision laser stabilisation via optical cavities M.J. Martin and J. Ye; 16. Quantum optomechanics G.D. Cole and M. Aspelmeyer; 17. Cavity quantum electrodynamics T.E. Northup.

Sommario/riassunto

Thermal noise from optical coatings is a growing area of concern and overcoming limits to the sensitivity of high precision measurements by thermal noise is one of the greatest challenges faced by experimental physicists. In this timely book, internationally renowned scientists and engineers examine our current theoretical and experimental understanding. Beginning with the theory of thermal noise in mirrors and substrates, subsequent chapters discuss the technology of depositing coatings and state-of-the-art dielectric coating techniques used in precision measurement. Applications and remedies for noise reduction are also covered. Individual chapters are dedicated to specific fields where coating thermal noise is a particular concern, including the areas of quantum optics/optomechanics, gravitational wave detection, precision timing, high-precision laser stabilisation via optical cavities and cavity quantum electrodynamics. While providing full mathematical detail, the text avoids field-specific jargon, making it a valuable resource for readers with varied backgrounds in modern optics.
