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Sommario/riassunto

This book, the first dedicated to the topic, provides a comprehensive treatment of forward stimulated Brillouin scattering (SBS) in standard optical fibers. SBS interactions between guided light and sound waves have drawn much attention for over fifty years, and optical fibers provide an excellent playground for the study of Brillouin scattering as they support guided modes of both wave types and provide long interaction lengths. This book is dedicated to forward SBS processes that are driven by co-propagating optical fields. The physics of forward SBS is explained in detail, starting from the fundamentals of interactions between guided optical and acoustic waves, with emphasis given to the acoustic modes that are stimulated in the processes. The realization of forward SBS in standard single-mode, polarization-maintaining and multi-core fibers is then discussed in depth. Innovative potential applications in sensors, monitoring of coating layers, lasers, and radio-frequency oscillators are presented. This book introduces the subject to graduate students in optics and applied physics, and it will be of interest to scientists working in fiber-optics, nonlinear optics and opto-mechanics.