depletion, inversion or accumulation layer at the surface of the semiconductor, resulting from a built-in or applied dc field is presented. Experimental measurements for both n- and p-type Silicon on Lithium Niobate systems are in very good agreement with this theory, and they lead to a novel technique of measurement of the surface state distribution on semiconductors. The silicon on lithium niobate structure used gives rise to one of the largest convolution efficiencies reported to date. Several signal processing applications are presented. They show the versatility of the device which can be employed as a programmable filter or a parametric processor. In addition, the first autocorrelation is demonstrated by cascading two convolvers. The acoustic convolver was adapted for the scanning of optical images.

Photonic Aspects of Modern Radar Henry Zbella 1994 Here's all the engineering information needed to integrate the fields of optics and electronics. Assembling a unique blend of expertise from industry, academia, and government, Photonic Aspects of Modern Radar shows the applications of this technology, both in the evolution of today's radar and in future systems.

Acousto-Optic Signal Processing Berg 1995-11-17 This work describes all aspects of acousto-optic signal processing, from the theory of acousto-optic interaction and basic devices, to the practical use of frequency- and time-domain signal processing systems. This edition features information on spectrum analysis, signal correlation, signal delay applications, image processing, photonic switching, and more. College and university bookstores may order five or more copies at a special student price, available on request from Marcel Dekker, Inc.

Acousto-optic Signal Processing Norman J. Berg 1983 This unparalleled single-source reference/text thoroughly describes all aspects of acousto-optic signal processing -- from the theory of acousto-optic interaction and basic devices to the practical application of both frequency- and time-domain signal processing systems. The book makes the important technologies and mathematical concepts behind today's optical communications systems accessible and understandable to practicing and future electrical and communication engineers. Featuring nearly 400 figures and over 900 equations, the book provides the practical engineering details and mathematical tools necessary to analyze and design optical fiber systems.

Field Theory of Acousto-optic Signal Processing Devices Craig Scott 1992 Here is a thorough introduction to acousto-optic theory from both the acoustic and electromagnetic viewpoints. Each chapter of this highly informative reference ends with a series of problems designed to help you understand the theory and phenomena.

Optical Wave Semiconductor Convolver Applied to Electrical and Optical Signal Processing Herve Renson Gautier 1975 This work presents an experimental and theoretical study of the interactions between acoustic surface waves on a piezoelectric insulator and charge carriers in a neighboring semiconductor separated by a small airgap, and the application of these phenomena to signal processing and optical imaging. Although the two media are mechanically isolated, the electric field associated with the surface waves penetrate into the semiconductor and interact with its charge carriers. This interaction is nonlinear, and, in the case of two oppositely propagating surface waves, real-time convolution is performed. A new theory of the convolution interaction, taking into account the possible presence of a