XIV. PROCESSING AND TRANSMISSION OF INFORMATION*

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Prof. R. G. Gallager	J. R. Colton	J. H. Nyman
Prof. F. C. Hennie III	P. M. Ebert	G. C. O'Leary
Prof. I. M. Jacobs	D. D. Falconer	R. Pilc
Prof. R. E. Kahn	L. M. Goodman	J. T. Pinkston III
Prof. R. S. Kennedy	C. J. Johnson	E. W. Portner, Jr.
Prof. C. E. Shannon	J. Max	J. S. Richters
Prof. H. L. Van Trees	R. F. McCann	D. L. Snyder
Prof. J. M. Wozencraft	G. Q. McDowell	R. N. Spann
D. S. Arnstein	J. H. Meyn	W. R. Sutherland
R. A. Carpenter	J. C. Molden	M. G. Taylor

A. OPTICAL COMMUNICATION SYSTEMS

An interferometric demodulator for use with frequency-position modulation has been investigated by R. E. Olsen in a thesis entitled "Interferometric Demodulation of FM at Optical Frequencies." His work suggests that interferometric techniques can be used to implement practical and nearly optimal processors for such alphabets. The alphabet size is limited by the Finesse if the best performance is to be realized.

Methods of generating desirable communication signals have been studied by C. J. Johnson in a Master's thesis entitled "Electro-optic Properties and Communication Applications of $BaTiO_3$." He investigated those properties of large single crystal samples of $BaTiO_3$ which are relevant to optical modulators. These crystals were grown by Dr. A. Linz and V. Belruss of the Massachusetts Institute of Technology.

In a third investigation, J. R. Colton has established a mathematical model for transmission channels employing optical waveguides that distort the signals because of surface imperfections. He envisaged the imperfections as random in character and applied a Central Limit Theorem argument to Helmholtz's Equation; he concluded that the resultant channel output may be approximated by a Gaussian random process. His work will culminate in a thesis to be entitled "Analysis of an Optical Fiber as a Discrete Communications Channel," which will be submitted to the Department of Electrical Engineering, M.I.T., in partial fulfillment of the requirements for the degree of Master of Science.

R. S. Kennedy

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