ABSTRACTS

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PAPERS

A Survey of Reliable Multicast Technology

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Reliable Multicasting (RM) has got much attention as next generation information delivery technology. RM provides information delivery without errors to a large number of users simultaneously. It is mainly implemented as a transport protocol (RMT) over IP multicast protocol on the Internet, a number of RMTs have been proposed by present in the research area. Some representative RMTs have already been made commercial products, and are used for actural services on satellite Intranets. On the other hand, IETF started standardization of RMT in 1999 for the widely spread of RM on the global Internet. This paper presents the current state and the trend of RM by surveying RMTs, commercial products and IETF standardization.
key words: *reliable multicasting, IP multicast, Internet, data reliability, congestion control, FEC*

Optical Properties of Multi-component Oxide Glasses and Glass Fibers

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We investigated optical properties of multi-component oxide glasses and glass fibers, which contain alkali metals. Especially in a KNMS glass, the lowest Rayleigh scattering coefficient was obtained (38% of the value for pure SiO_2 glass). We believe that the Rayleigh scattering due to the concentration fluctuation was drastically reduced in this KNMS glass. We also fabricated a deuterated Na_2O-Al_2O_3-SiO_2 (NAS) glass fiber and a loss reduction of 800 dB/km at a wavelength of 1.55 μm was achieved by deuteration. We clarified that increase of a loss above 1.5 μm in multi-component glass fibers was caused by an absorption of hydrogen-bonded OH groups.
key words: *multi-component oxide glasses, optical fibers, Rayleigh scattering, mixed-alkali effect, deuteration, OH absorption*

An Effect of Degree of Modulation in Optical Frequency-Domain Encoding CDMA Communication Systems

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In Frequency-Domain Encoding CDMA (FE-CDMA) communication systems, a liquid crystal phase modulator (LCM) can be used as a pseudorandom spatially phase mask. However, the degree of modulation of LCM is very sensitive to the temperature. In this paper, the effect of the degree of modulation of LCM in FE-CDMA communication system is investigated, and we derive the bit error rate (BER). We find that as the degree of modulation changes, the BER significantly degrades. As a result, we show that the degree of modulation is one of the most important factors that affect the BER.
key words: *optical communication, optical CDMA system, frequency-domain encoding CDMA (FE-CDMA), liquid crystal modulator*

Performance Evaluation of OFDM with the Compensation Technique of the Nonlinear Distortion Using Partial Transmit Sequence and Predistortion

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To improve the bit error rate (BER) performance of the linearlized constant power coded OFDM (LCP-COFDM), we propose a technique that combines the partial transmit sequence (PTS) technique with the LCP-COFDM technique. By means of the computer simulation, we evaluate the proposed technique about the BER and power spectrum density (PSD) performances. In the performance evaluation about BER, we consider both cases that the side information of the PTS technique is coded and uncoded by error correction codes. As a result, we show that the proposed technique can improve the BER performance, with keeping very low out-of-band emission.
key words: *OFDM, nonlinear distortion, predistortion, linearlized constant power coded OFDM, partial transmit sequence*