Abstracts of Papers from Other Journals

Resolution Enhancement of Backward Propagated Images by Wavefield Orthogonalization, Hua Lee, *Journal of the Acoustical Society of America, 77:*1845, May 1985.

Backward propagation is a convolution-type reconstruction algorithm designed for coherent holographic imaging which is commonly performed by frequency-domain filtering. When the size of the receiving apertures is small, image resolution is degraded due to the uncertainty caused by the incomplete measurement of the wavefield in addition to the limitation corresponding to the narrow spatial-frequency bandwidth. In this paper, the ambiguity of target identification is regarded as a result of nonorthogonal correlations of the wavefield signatures corresponding to distinct target locations. A resolution enhancement algorithm is presented by wavefield orthogonalization to uncorrelate the wavefield patterns to achieve resolution improvement on backward propagated images.

Electronic Cinematography: Progress Toward High Definition, R. L. Stowe and G. Wyland, *EBU Review, 209:*2, February 1985.

This article on the electronic cinematography system developed by CBS briefly describes the special camera and the editing system designed to be flexible in use and to eliminate multi-generation intermediate copying. After sections dealing with the results obtained, the authors show how and why electronic cinematography should develop toward the adoption of a high-definition standard, with emphasis on the need for broadcasters to effectively counter the challenge launched by the new video distribution media if they are to avoid being left behind.

I-PAL: A Compatible Variant of PAL, Free of Cross Effects and with Enhanced Horizontal Definition in the Luminance, G. Holoch, P. Janker, and N. Mayer, *EBU Review, 209:*7, February 1985.

In the PAL process, interactions between the luminance and chrominance are seen as cross effects. The horizontal definition of the luminance signal is reduced because the color subcarrier must be suppressed in the receiver. These difficulties can be overcome in the I-PAL system. In this system, every other line carries only the luminance signal without any bandwidth limitation; the alternate lines carry low-frequency luminance components and the PAL color subcarrier with quadrature modulation. The normal PAL burst, with line-rate phase switching, is retained. Pictures transmitted in this form are free of cross effects and have enhanced horizontal definition in the luminance. The price paid is a reduction in the diagonal definition of the luminance and poorer vertical definition in the color-difference signals, as in the MAC process. The I-PAL signal is compatible with all equipment designed for normal PAL signals, and an I-PAL receiver can process a normal PAL signal. The system can also be used in NTSC form.

Evolution of Data-Broadcasting Standards and the Role of the EBU, M. Cominetti, *EBU Review, 209:*15, February 1985.

Many developments have taken place in data broadcasting since the early 1970s when it was first suggested that digitally coded texts could be fitted into a few spare

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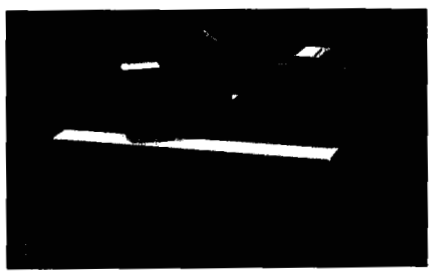

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lines of the field-blanking interval of the television picture. The author reviews these developments and explains the principal features of the four main groups of teletext systems for which specifications have now been published. Several other data-broadcasting systems are briefly described. There follows a summary of EBU activities relating to teletext and a review of probable future developments, particularly in satellite broadcasting services and compatibility with the CEPT videotex standard.

Modular Implementation of Interconnecting Networks in VLSI, S. K. Paranjpe and R. Mitra, *Journal of the Institution of Electronic and Radio Engineers, 55:*11, January 1985.

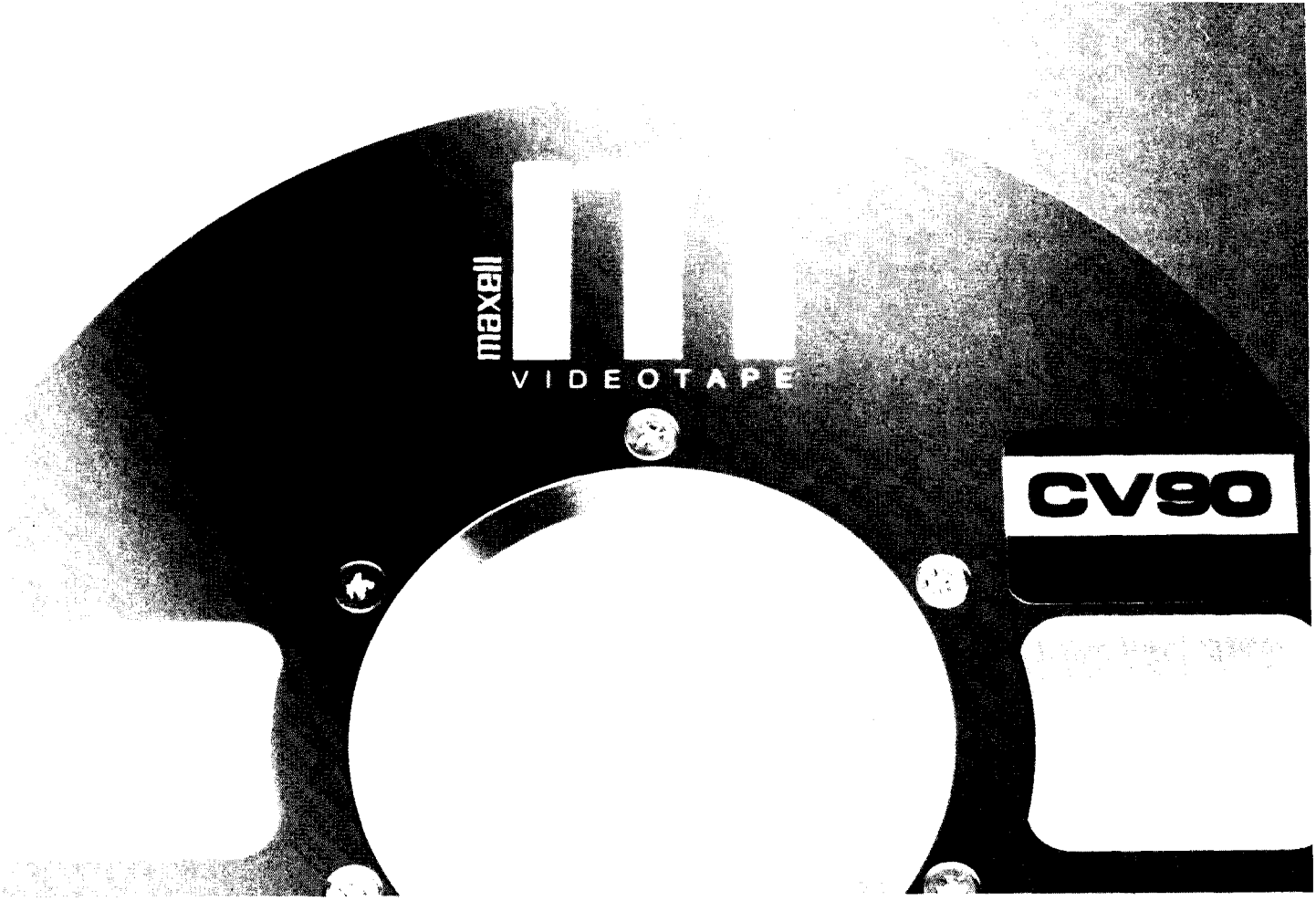
The paper proposes a modular implementation of a multi-stage cube interconnecting network suitable for VLSI environments. A realistic size of the module has been worked out and certain topologies for the intrachip and interchip connections are compared. A dual-tree interconnecting network and its performance evaluation are discussed in detail. The proposed network has many attractive features and appears to be a better alternative to the interconnecting networks presently used in distributed systems.

Algorithmic Aspects in On-Line Triangulation, Armin W. Gruen, *Photogrammetric Engineering & Remote Sensing, LI:*419, April 1985.

Evaluation criteria for the quality and efficiency of on-line triangulation systems are based on response time, required computer facilities, methods of analysis of results, and degree and comfort of interactivity. This article discusses some of the major components that influence the on-line triangulation procedure. After a historical review, the goals of on-line triangulation are formulated and problems are isolated. Following an investigation into the estimation model, estimation principle, and method of data analysis, the main emphasis is placed on the computational algorithm. Three sequential algorithms — the Kalman covariance update, the triangular factor update with Gauss/Cholesky decompositions, and the Givens transformations update — are emphasized. Some operational aspects are also addressed.

Low Cost Turnstile for TV Transmitting Antenna for Band III, I. M. Sudan and K. M. Paul, *ABU Technical Review,* No. 98, p. 3, May 1985.

This paper describes the design and development of a lightweight turnstile TV transmitting antenna for Band III. It is a 3-bay antenna having a power-handling capacity of about 1 kW and a gain of about 4.6 dBi. The radiation pattern is almost omni-directional within 2 dB in the horizontal plane.



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Reverberation Time in Enclosures: The Surface Reflection Law and the Dependence of the Absorption Coefficient in the Angle of Incidence, Giuliana Benedetto and Renato Spagnolo, *Journal of the Acoustical Society of America, 77:*1447, April 1985.

The sound decay and reverberation time of enclosures depend on the amount of randomization achieved during the decay. The randomization is determined by the degree of surface roughness and absorptivity and is also related to the shape of the enclosure. Many authors showed that, even in the hypothesis of a memoryless reflection law, the reverberation time largely varies when the absorptivity is nonuniformly distributed on the surfaces, for a fixed value of the sound absorption coefficient. Applying a ray-tracing simulation procedure to a simple 2-dimensional enclosure, the effect is shown to be still stronger when a certain fraction of specular reflection is taken into account. In this case, it is also proved that one cannot neglect the effects connected to the dependence of the sound absorption coefficient on the incidence angle, which seems to introduce additional sound randomization.

A "Split-Track" Recording Technique for Improved ENG Audio, Skip Pizzi, *Journal of the Audio Engineering Society, 33:*245, April 1985.

The split-track recording technique employs any recorder with two audio tracks, using two separated microphones, to gather synchronized sound from two independent sources simultaneously. The two tracks are mixed to mono during post-production. Applications include two-lavalier-microphone interviews, simultaneous foreign-language interpretation, podium and audience miking, recording two simultaneous events, and dual-perspective sound effects of ambience recording. Results are improved since little or no on-location mixing is required during the original recording.

DBS — Progress and Problems, Pat Hawker, *IBE, 16:*7, March 1985.

The progress of DBS becomes increasingly difficult to chart. At times, DBS plans seem to be on course with the future rising above the horizon. At other times, projects seem to be crashing before take-off with advanced technology stymied by financial doubts. This paper surveys the present situation.

Error Estimation in Sampling Digital Wattmeters, F. Filicori, D. Mirri, and M. Rinaldi, *IEE Proceedings-A, 132:*122, May 1985.

The problem of estimating the error due to time discretization in sampling digital wattmeters is dealt with. In particular, those instruments based on the simultaneous sampling of the voltage and current waveforms at equally spaced time instants in one or more periods are considered. As the discretization error is a periodic function with zero mean value of the initial sampling instant, its RMS value can be adopted as a useful parameter for evaluating its magnitude. An algorithm for the average power computation is proposed, which also allows for the estimation of the RMS value of the error component. Some examples of application in power electronics systems are discussed. The proposed method can also be used in problems where the integral of a periodic function is approximated by an average of equally spaced samples.

Depth-of-Field Improvements and Removal of Distortion in Long Wavelength Imaging Systems, Y. Yamani and J. C. Bennett, *IEE Proceedings-F, 132:*149, June 1985.

A new approach to the problem of depth-of-field limitations and distortion in long wavelength imaging systems is proposed. The method exploits the backward propagation imaging algorithm and can be utilized in circumstances where data is recorded in the close near-field region. The fundamental theory of the technique is provided, and images from both simulations and experiment are presented as examples of the process.

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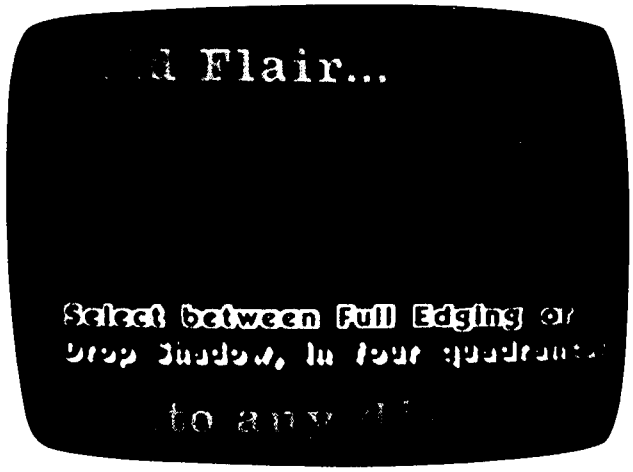

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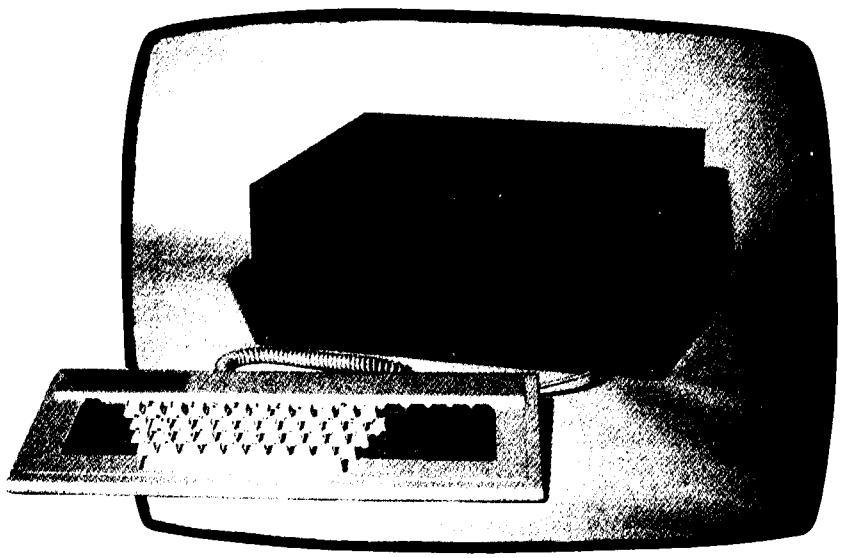

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A Multi-Standard High-Definition Television Projector, K. G. Freeman, *Journal of the Institution of Electronic and Radio Engineers, 55:*47, February 1985.

This paper describes the design, construction, and performance of a 1-m^2, high-definition, wide-screen, multi-standard color television projection display for use in laboratory studies of possible future television standards. Initially intended to operate on a 1249-line standard, it can now provide a number of scanning formats. A particular feature of the display is a user-friendly microprocessor-controlled digital convergence system, which enables the primary images to be registered everywhere within a fraction of a picture-element in only a few minutes.

The Perpendicular Magnetic Record and Replay Processes, C. D. Wright and B. K. Middleton, *Journal of the Institution of Electronic and Radio Engineers, 55:*54, February 1985.

A theoretical treatment, basically analytical, of both the record and replay processes in perpendicular magnetic recording is given. The form of the written magnetization transitions is calculated from first principles and is shown to follow the record-head field shape. Replayed voltage pulses, both isolated and crowded, are determined via reciprocity techniques. Some experimental recording measurements are presented and analyzed in terms of the theoretical predictions.

Measurement and Modelling of Amplitude and Phase Scintillations in an Earth-Space Path, E. Vilar, J. Haddon, P. Lo, and T. J. Moulsley, *Journal of the Institution of Radio and Electronic Engineers, 55:*87, March 1985.

This paper summarizes the theory and experimental results obtained by Portsmouth Polytechnic on amplitude and phase scintillations on a downlink path through the atmosphere during the orbital test satellite campaign of research at 11.786 GHz. Engineering applications are emphasized. Relevant theoretical studies are summarized, inclusive of antenna aperture smoothing, which aids the understanding of the scintillation process and the use of the experimental results in system design and planning. The results include chart recording observations, spectra of the scintillations, correlation with meteorological conditions, and results of cumulative distributions of scintillation fade, fade rate, and intensity. Propagation-induced phase noise is also dealt with, including theoretical estimates of the phase noise due to turbulence and precipitation, and an outline of the experimental techniques used to measure the FM noise of the beacons.

Domestic TV Equipment: Immediate Goals and Prospects, V. M. Palitsky, *Tekhnika Kino i Televidenya,* 3, February 1985.

This paper considers the tasks for developing studio equipment and mobile TV broadcast units with digital encoding, and also the prospects of developing video recording equipment.

Image Perception in Motion Picture Theaters, L. G. Larionov, *Tekhnika Kino i Televidenya,* 11, February 1985.

The basic dimensions of theater rooms and screens and their interrelation and influence on perception quality of film images are considered as well as the values of these parameters in standards of several countries.

An Automated TV Complex Control System, A. M. Gorizontov, *Tekhnika Kino i Televidenya,* 55, February 1985.

This paper considers methods of designing an automated TV complex control system that allows more efficient control of preparation, production, and release of TV programs by applying economic mathematical methods and computer technology.

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