



**EXECUTIVE**

David L. George  
*Editorial Vice-President*

Frederick M. Remley  
*Chairman/Board of Editors*

Lynette Robinson  
*Executive Director*

**JOURNAL STAFF**

Jeffrey Friedman  
*Editor/Publisher*

Joyce R. Hurwitz  
*Senior Editor*

Carol King  
*Associate Editor/Public Relations*

Mathew V. Kuriakose  
*Graphics/Production Supervisor*

MaryAnn Frusciante  
*Production Coordinator*

Marilyn Waldman  
*Advertising/Editorial/Program  
Coordinator*

**MARKETING/EXHIBITS**

Alan Ehrlich  
*Marketing/Exhibits Manager*

**ENGINEERING**

Sherwin H. Becker  
*Director of Engineering*

Mark S. Hyman  
*Staff Engineer*



Printed in the USA

# SMPTE Journal

VOL. 102, NO. 10

OCTOBER 1993

**ARTICLES**

Multiplexing and Demultiplexing Digital Audio and Video in Today's Digital Environment  
*Keith Y. Reynolds and Joe Rainbolt*..... 905

Applying Constrained Optimization to Computer Graphics  
*Jeff Goldsmith and Alan H. Barr*..... 910

The First Twenty Years of HDTV: 1972-1992  
*Mark I. Krivocheev • Edited by S. N. Baron*..... 913

The Interfacing of AES/EBU Serial Digital Audio Signals with D-1, D-2, and D-3 Format Digital Television Tape Recorders  
*Martin A. Lilley*..... 931

**SMPTE REPORTS**

Biographical Sketch: Ken Davies, SMPTE Engineering Vice-President..... 938

135th SMPTE Technical Conference and Equipment Exhibit, October 29 to November 2, 1993, Los Angeles, Calif..... 940

SMPTE Advanced Television and Electronic Imaging Conference, February 4-5, 1994, Chicago, Ill. .... 955

1993 Progress Report to Appear in April 1994 *Journal*; SMPTE Executive Vice-President Stan Baron Named Chairman..... 960

**SMPTE NEWS AND DEPARTMENTS**

News.....	956	Obituaries.....	962
Mea Culpa.....	956	New Products.....	963
Section Meetings.....	957	Classified.....	966
Engineering News.....	958	Professional Services.....	967
Books, Booklets, and Brochures.....	959	Information for Authors.....	968
Calendar.....	961	Reader Service Card.....	969
		Application for Membership.....	971

**STANDARDS AND RECOMMENDED PRACTICES**

Approved American National Standards..... 974  
*ANSI/SMPTE 101-1993, Motion-Picture Film (16-mm)— Perforated 2R-3000 — Magnetic Striping; ANSI/SMPTE 237-1993, Motion-Picture Film (35-mm) — Perforated DH-1870; and ANSI/SMPTE 74-1993, Motion-Picture Cameras (16- and 8-mm) — Zero Point for Focusing Scales*

Approved SMPTE Recommended Practices..... 979

Proposed SMPTE Standards..... 982  
*SMPTE 37M, Motion-Picture Equipment — Raw Stock Cores; and SMPTE 269M, Television — Fault Reporting in Television Systems*

*SMPTE Journal* (ISSN: 0036-1682) published monthly by the Society of Motion Picture and Television Engineers, 595 West Hartsdale Ave., White Plains, NY 10607. Second-class postage paid at White Plains, N.Y., and at additional mailing office. Copyright © 1993 by the Society of Motion Picture and Television Engineers, Inc. All rights reserved. Printed in the U.S.A. No part of this issue may be reproduced without written permission of the publisher. Statements and opinions expressed in articles or editorials in the *SMPTE Journal* are expressions of contributors and do not necessarily represent the policies or opinions of the Society. Advertisements appearing in this publication are the sole responsibility of the advertiser. Subscription rates: SMPTE members, \$20.00 included in membership dues; nonmembers, U.S., \$75; elsewhere, \$85.00; airmail surcharge in addition to nonmember rates are: Europe \$50.00, Asia \$65.00. Single copy, \$8.00. MEMBERSHIP in SMPTE is available according to qualifications at the following annual dues: Active and Associate, \$65.00; Student, \$25.00. All members receive the *SMPTE Journal* as part of membership.