Hotel. Those who do not use the postal card when registering at the Hilton should note that reservations are for the SMPTE 9th Congress. These should be addressed to the Reservation Manager, The Denver Hilton, 1550 Court Place, Denver, Colorado 80202.

All rooms have TV, radio, air conditioning, and many have a view of the Rocky Mountains. Garage parking is available below the hotel. There is no charge for children, regardless of age, when they occupy the same room as their parents. For each additional person in a twin or double bedroom, the extra charge is $5.00 per person.

Hotel Rates

Singles — $14 to $22 Doubles — $18 to $28
Twins — $18 to $28
Suites — Parlor and one bedroom — $40 to $48
Parlor and two bedrooms — $62 to $85

Program Outline

Saturday 1200–1700 Registration

Sunday 1000–1700 Registration
1200–1700 Opening of Exhibits
1800–1900 Pre-Banquet Reception
1900–2400 Banquet
Awards Presentation
Guest Speaker: Harold E. Edgerton

Monday 0800–1700 Registration
0900–1200 Educational Seminar, Panel Discussion
1400–2000 Exhibit Hours
1400–1700 Holography and Image-Dissection Cameras
2000–2230 Film Showings I

Tuesday 0800–1700 Registration
1000–1700 Exhibit Hours
0900–1200 Lasers
1400–1700 Rotating-Mirror and Streak Cameras
2000–2230 Film Showings II

Wednesday 0800–1200 Registration
0830–1130 Exhibit Hours
0830–1130 Image Converters
1200–2100 Excursion to Colorado Springs

Thursday 0800–1700 Registration
1000–1700 Exhibit Hours
0900–1200 Light Sources, X-Rays
1400–1700 Applications I
1900–2000 Pre-Dinner Reception
2000–2400 Dinner Dance

Friday 0800–1700 Registration
0900–1700 Applications II
1400–1700 Applications III

Program

This Program is the scheduling of papers within the sessions. It is as accurate and complete as possible. Before the Congress, however, papers may be removed or rearranged into other sessions. The sessions are firm. Questions about specific papers or sessions should be addressed to Society Headquarters, Att: 9th Congress — Elaine Itzkowitz, (212) 867-5410; Congress Chairman Carlos H. Elmer, P.O. Box 875, Scottsdale, Arizona 85252, (602) 948-2867; or Program Chairman Robert D. Shoberg, 1167 Hollenbeck Rd., Sunnyvale, CA 94087 (408) 739-4387. The Final Program will be available ten days before the Congress from Society Headquarters, and during Congress week at the Denver Hilton Hotel.

SATURDAY—AUGUST 1

1200–1700 REGISTRATION

SUNDAY—AUGUST 2

1000–1700 REGISTRATION

1200–1700 GRAND OPENING OF EXHIBITS

1800–1900 PRE-BANQUET RECEPTION, COCKTAIL PARTY

1900 CONGRESS OPENING BANQUET

Introduction of Distinguished Guests

Welcoming Remarks by DEANE R. WHITE, SMPTE President

Awarding of the E. I. du Pont Gold Medal

Presentation of SPIE award by EUGENE B. TURNER, SPIE President

Guest Speech: Experiences With High-Speed Photography
HAROLD E. EDGERTON, EG & G, Boston

MONDAY—AUGUST 3

0800–1700 REGISTRATION

1400–2000 EXHIBIT HOURS

0900–1200 OPENING OF TECHNICAL SESSIONS

Recognition of International Committee for High-Speed Congresses

CARLOS H. ELMER, 9th Congress Chairman

Premier showing of motion picture on high-speed photographical applications in industry, introduced by 9th Congress Editorial Chairman WILLIAM G. HYZER and Tech Films President WILLIAM J. McCREA

SEMINAR: Education for Photo Technology

PANEL: Educational Requirements and Programs in High-Speed Photography, Photographic Instrumentation and Photographic Science

HERBERT E. FARMER, Dept. of Cinema, University of Southern California, Los Angeles, *Chairman*

MONDAY AFTERNOON

1400–1700 HOLOGRAPHY AND IMAGE-DISSECTION CAMERAS

High-Speed Holographic Recording of Transilluminated Events

J. W. C. GATES, R. G. N. HALL and I. N. ROSS, National Physical Laboratory, Teddington, England

Interferometry by Means of Holography in Two Wavelengths

A. HIRTH and K. VOLLRATH, Deutsch-Franzosisches Forschungsinstitut Saint-Louis, France

High-Speed Photography and Holographic Techniques Using Acoustic Light Deflection

MARTIN FELDMAN, Bell Telephone Laboratories, Murray Hill, NJ

Time-Resolved Spectroscopy Using Holographic Imaging

TAKAO TSUNO and RYOJI TAKAHASHI, Engineering Research Institute, Tokyo University, Tokyo

A Rotating-Mirror Hologram Camera

M. A. LOWE, United Kingdom Atomic Energy Authority, Aldermaston, England

Holographic Study of High-Velocity Droplets Entrained in Steam or Air

JOHN M. WEBSTER, Marchwood Engineering Laboratories, Southampton, England

Holographic Interferometry Applied to High-Speed Flame Research

H. J. RATERINK and C. W. LAMBERTS, Institute of Applied Physics TNO, Delft, The Netherlands

A Super-Speed Microphotographic Camera

A. S. DUBOVIK, P. V. KEVLISHVILI, N. M. SITSINSKAYA, M. B. KONAKOVA, B. G. BELOV, G. P. ILYUSHIN and D. A. NALBANDYAN, O. Schmidt Institute of Physics of the Earth, USSR Academy of Sciences, Moscow

Some Aspects of Development of Raster Cameras With Moving Aperture Diaphragm

V. V. GARNOV and N. M. SITSINSKAYA, O. Schmidt Institute of Physics of the Earth, USSR Academy of Sciences, Moscow

Application of Frequency Response and Deep-Dimension Picture Characteristics for Estimation of Photographic Systems of High-Speed Dissection Cameras

O. F. GREBENNIKOV, The Leningrad Institute of Motion-Picture Engineers, USSR

A Low-Voltage Pockels Cell Having High Repetition Rates and Short Exposure Durations

R. E. ROWLANDS, IIT Research Institute, Chicago, and J. L. WENTZ, Westinghouse Electric Corp., Baltimore

Deciphering and Processing Digital Photographic Data

A. DE VOLPI, Argonne National Laboratory, Argonne, IL

MONDAY EVENING

2000–2230 FILM SHOWINGS I

Applications of High-Speed Motion Pictures to Textile and Apparel Manufacturing

ALLAN RALSTON, Burlington Industries Research Center, Greensboro, NC

High-Speed Photography of Particle Motion in a Disc Refiner

D. ATACK and W. D. MAY, Pulp and Paper Research Institute of Canada, Montreal

The Rotor Burst Protection Program

G. J. MANGANO, U.S. Naval Air Propulsion Test Center, Philadelphia

Measuring the Angular Deflection of the Saturn II Engine

DONALD H. PETERSON, Glendale, CA

Motion-Picture Photography of High-Speed Impact Tensile Fracture

CHUJI MIYATA and TOSIMITU TUMURA, Kanagawa University, Yokohama, and ATSUTOSHI MURAMATSU, Tokyo Medical and Dental Hosptial, Tokyo

Event-Controlled High-Speed Movies With Nanosecond Exposures

F. FRÜNGEL and W. THORWART, Impulsphysik GmbH, Hamburg, Germany

TUESDAY MORNING—AUGUST 4

0800–1700 REGISTRATION

1000–1700 EXHIBIT HOURS

0900–1200 LASERS

Stereo Laser Framing Camera

GEORGE T. CARPLUK, Lawrence Radiation Laboratory, Livermore, CA

Application of Phase-Locked Solid Lasers to High-Speed Cinematography

F. CHABANNES and E. MILOT, Laboratoire Central de l'Armement, Arcueil, France

Laser With High-Frequency Q-Factor Modulation for Fast Motion-Picture Photography

M. P. VANJUKOV, S. V. EVDOKIMOV and E. V. NILOV, A. F. Ioffe Physical-Technical Institute, USSR Academy of Sciences, Leningrad

Model of a High-Speed Camera With Electrooptical Light Deflection

F. MALOTA, Institut für Flugfunk und Mikrowellen, Deutsche Forschungs- und Versuchsanstalt für Luft- und Raumfahrt E.V., Post Wessling, Germany

A Wollaston Prism Schlieren Interferometer

V. SERNAS, Rutgers University, New Brunswick, NJ

Interferometry of Rapidly Varying Phase Objects Using the Fundamental and the Harmonic Wavelengths of a Ruby Laser

M. HUGENSCHMIDT and K. VOLLRATH, Deutsch-Franzosisches Forschungsinstitut St. Louis, France

Gas Velocity Measurement Employing High-Speed Schlieren Observation of Laser-Induced Breakdown Phenomenon

ROBERT L. LEIGHTON, United Aircraft Research Laboratories, East Hartford, CT

Application of Laser and Flash X-Ray Techniques in Hypervelocity Ablation-Erosion Investigations in an Hyperballistics Range

JOHN L. LANKFORD, U.S. Naval Ordnance Laboratory, White Oak, Silver Spring, MD

System for Velocity Measurement of a Projectile Using a Laser and a Fabry-Perot Interferometer

M. DURAND and P. LAHARRAGUE, Commissariat à l'Energie Atomique, Sevran, France

High-Tension Generator and Attenuator of Pulses in the Nanosecond and Subnanosecond Range

MARCEL BLANCHET, Laboratoire Central de l'Armement, Arcueil, France

Use of Modulation Transfer Functions in Calculation of Optical Prism Compensators

G. I. BELINSKAYA, O. Schmidt Institute of Physics of the Earth, USSR Academy of Sciences, Moscow

TUESDAY AFTERNOON

1400–1700 ROTATING-MIRROR AND STREAK CAMERAS

A Biaxial Multistreak Recording Technique
MANFRED HELD, Bölkow Apparatebau GmbH, Schrobenhausen, Germany

Partial Frame Shutter for Rotating-Mirror Cameras
GALE S. WEEDING, Falcon Research and Development Co., Denver

Visualization and Measure of Dynamic Deformations of Rotating Mirrors
MELLE. WETZEL, Laboratoire Central de l'Armement, Arcueil, France

Two New High-Speed Cameras for Total Coverage
B. BOUHERET, Laboratoire Central de l'Armement, Arcueil, and M. ANDRE, Commissariat à L'Energie Atomique, Montrouge, France

A New High-Speed Framing Camera
B. BRIXNER, Los Alamos Scientific Laboratory, NM, A. JOHNSON, Edgerton, Germeshausen & Grier, Inc., Boston, and O. W. NIEMI, Lawrence Radiation Laboratory, Livermore, CA

A High-Intensity Point Light Source
D. D. PREONAS and H. F. SWIFT, University of Dayton Research Center, OH

A Continuous-Access Rotating-Mirror Framing Camera for Field Use
E. A. IGEL, Sandia Corp., Albuquerque, NM

Time-Resolved Spectroscopy of a Pulse Discharge in a Magnetic Field
A. PETRAKIEV and R. MILANOVA, University of Sofia, Bulgaria

Technique for Optically Calibrating Fast Streak Displays
M. A. NELSON and T. DAVIES, Edgerton, Germeshausen & Grier, Inc., Goleta, CA

Advances in the Spark-Tracing Method for Analyzing Gas Flows
F. FRÜNGEL, Impulsphysik GmbH, Hamburg, Germany

Some Modern Application Techniques of Stroboscopic High-Speed Photography
CHARLES E. MILLER, General Radio Co., West Concord, MA

TUESDAY EVENING

2000–2230 FILM SHOWINGS II

The Application of Dissection Cameras for Investigations of Fast-Going Processes
S. M. PROVORNOV, O. F. GREBENNIKOV and V. P. GOUSEV, The Leningrad Institute of Motion Picture Engineers, USSR

Hammer-Throwing Techniques Analysed by High-Speed Photography
S. K. JOSHI, University of Birmingham, England

Obtaining Maximum Space/Time Data on Periodic Phenomena in Minimum Time (Jet Observations Around 10^6 Frames/S)
L. J. POLDERVAART and F. H. M. JONGSMA, University of Technology, Eindhoven, The Netherlands

Use of High-Speed Photography in the Research Institute of Agricultural Machinery
J. KALINA, Research Institute of Agricultural Machinery, Prague, Czechoslovakia

Flow Visualisation in a Rotary Cement Kiln
F. D. MOLES and P. G. LAIN, University of Surrey, Guildford, England

Stresses Occurring During Rotary Peeling of Veneer
B. E. FOX, Canadian Forestry Service, Vancouver, B.C.

High-Speed Motion Pictures of the Near-Wakes of Axisymmetric Bodies
WALTER R. SIELING, Bell Telephone Laboratories, Whippany, NJ

WEDNESDAY MORNING—AUGUST 5

0800–1200 REGISTRATION

0830–1130 EXHIBIT HOURS

0830–1130 IMAGE CONVERTERS

A 300 Million Frames/S Image-Tube Camera
A. E. HUSTON, John Hadland (P.I.), Ltd., Bovingdon, England

An Image-Converter Camera
F. CACCIA, G. GUEKOS, U. WILD, M. J. O. STRUTT and H. H. GUNTHARD, Swiss Federal Institute of Technology, Zurich

The Application of Laser-Triggered Spark Gaps to Electro-optical Image-Converter Cameras
A. J. ALCOCK, M. C. RICHARDSON and M. YA. SCHELEV, National Research Council of Canada, Ottawa, Ontario

Realization of an Image Converter With a 300-PS Exposure Time
E. LAVIRON and C. DELMARE, Commissariat à l'Energie Atomique Centre d'Etudes de Limeil, Villeneuve Saint Georges, France

An Electronic Optics for Ultra-High-Speed Photography
MARC R. ALPERN and JEAN GAMBART, Commissariat à l'Energie Atomique Centre d'Etudes de Limeil, Villeneuve Saint Georges, France

Very-High-Speed Three Frames Electronic Camera With Storage Tubes, Slow Scanning and Magnetic Recording
J. MARILLEAU, M. SAINT-MLEUX, R. MAINDRON and G. GARCIN, Commissariat à l'Energie Atomique, Paris

High-Speed Image-Converter Recorders for Scientific Investigation
B. Z. GORBENKO, YU. A. DROZHBIN, G. V. KOLESOV and B. M. STEPANOV, P. N. Lebedev Physical Institute, USSR Academy of Sciences, Moscow

The Possibilities of Electrophotographic Registration of Rapid-Transient Events
S. G. GRENISHIN and YU. A. CHERKASOV, A. F. Ioffe Physical-Technical Institute, USSR Academy of Sciences, Leningrad

A Study of the Transmission Characteristics of Image-Converter Tubes Using Ultra-Short Laser Pulses
V. V. KOROBKIN, A. A. MALYUTIN and M. YA. SCHELEV, P. N. Lebedev Physical Institute, USSR Academy of Sciences, Moscow

Changes of Charged-Particle Concentration With Time in the Cathode Region in High-Current Discharge by Means of Image-Converter Cameras
V. B. AVRAMENKO, G. I. BACANOVICH, V. V. KANZEL, L. J. MINKO and V. I. RAKHOVSKY, Institute for High Temperatures, USSR Academy of Sciences, Moscow

Electronic Camera With Circular Slit
J. PUJOL, Commissariat à l'Energie Atomique, Sevran, and M. BLANCHET, Laboratoire Central de l'Armement, Arcueil, France

Multistage Fast-Response Image Converters for Science-Properties and Applications
M. M. BUTSLOV, E. K. ZAVOISKY and S. D. FANCHENKO, P. N. Lebedev Physical Institute, Academy of Sciences, Moscow

WEDNESDAY AFTERNOON AND EVENING
EXCURSION TO COLORADO SPRINGS

THURSDAY MORNING—AUGUST 6
0800–1700 REGISTRATION
1000–1700 EXHIBIT HOURS
0900–1200 LIGHT SOURCES AND X-RAYS

Small Area Flash Lamps
HAROLD E. EDGERTON, VERNON E. MACROBERTS and KENNETH R. CROSSEN, Massachusetts Institute of Technology, Cambridge

Flash Radiography of Shock Waves Generated by Double Discharges From Series- and Parallel-Connected Spark Gaps
W. SCHAAFFS and P. KREHL, Technical University of Berlin, Germany

Modification of the Exploding Wire-Light Source
C. E. CANADA, T. W. WARREN and N. O. RHOTON, Silas Mason Co., Amarillo, TX

Production of Trains of Luminous Impulses of Less Than One Nanosecond Duration
G. HARTMANN, Centre de Recherches, Laboratoire de Synthese Atomique et d'Optique Protonique, Ivry-sur-Seine, France

Use of the Afterglow of Pulsating Light Sources to Increase the Information Content of High-Speed Films
HANS-JOACHIM WITTWER, University of Stuttgart, Germany

Exploding Bridgewire Triggering of a Flash X-Ray Discharge
S. K. HANDEL and A. PONTERIUS, Institute of Physics, University of Uppsala, Sweden

Ten Nanosecond Radiography at 1200 Kilovolts
ARNE MATTSSON, Scanditronix Instrument AB, Uppsala, Sweden

Application of Electrooptical Recording Equipment to Short-Pulse-Length X-Ray Flash Investigations of Explosive Processes
J. C. BERGON and J. CONSTANT, Centre d'Etudes de Gramat, France

Pulse X-Ray System With Television Method of Image Visualization
A. P. BAYKOV, U. A. BELAGO, L. M. DIAMANT, V. I. DOTSENKO, A. M. ISKOLDEKII, E. A. KURASHOV, V. M. LYUBIN, YU. E. NESTERIKHIN, S. A. PLAKHOV, A. F. SHESTAK, R. M. STEPANOV and V. G. TSUKERMAN, The Siberian Branch of the USSR Academy of Sciences, Novosibirsk

Flash Discharge Radiation in Vacuum Ultraviolet
F. A. CHARNAYA, National Lighting Research Institute, Moscow

Some Characteristics of Thermal Plasma in Flash Tubes
I. M. GUREVICH, National Lighting Research Institute, Moscow

Spark Light Pulses of Extreme Short Duration
HEINZ FISCHER, Applied Physics, Technische Hochschule, Darmstadt, Germany

A New Technique for Ultra-Bright Nanosecond Flash Light Generation
J. L. BREWSTER, J. P. BARBOUR, F. M. CHARBONNIER and F. J. GRUNDHAUSER, Field Emission Corp., McMinnville, OR

A Time-Resolving X-Ray Grating Polychromator
W. A. WALLER and D. J. HUNT, United Kingdom Atomic Energy Authority, Aldermaston, England

THURSDAY AFTERNOON
1400–1700 APPLICATIONS I

High-Speed Cineradiography at High Energy
PH. VIGUIER and G. BOURDAROT, Commissariat à l'Energie Atomique, Sevran, France

New Holographic Studies of High-Speed Phenomena
P. SMIGIELSKI and A. HIRTH, Institut Franco-Allemand de Recherches de Saint-Louis, France

A One-Thousand Frame Per Second Intermittent Camera
JOHN JURGENS, Photo-Sonics, Inc., Burbank, CA

High-Speed Photography of Scale-Model Rock Blasting
ALGOT PERSSON, Swedish Detonic Research Foundation, Stockholm

Time Differences and Time Coordinates From Accelerating Films
GUNNAR LENNING, Stockholm, Sweden

The Fracture of Nonuniformly Toughened Glass
JOHN H. L. RANSON, Pilkington Brothers, Ltd., Lancashire, England

Quantitative Analysis of Hoof Motion Patterns, Using High-Speed Films of Trotter Racing
INGVAR FREDRICSON and STIG ANDERSSON, Royal Veterinary College, Stockholm; ROLF DANDANELL and KÅRE MOEN, Saab Aktiebolag, Linkoping; and BERNDT ANDERSSON, Research Institute of the National Swedish Defense, Stockholm

The FH Method—Surface-Temperature Measurement With the Aid of High-Speed Photography
YSUGIHIKO SATOH, JYOICHI KATAYAMA and HIROSHI ABE, Osaka Institute of Technology, Japan

Certain Aspects of Optical Recording of Large-Scale Explosions
V. V. GARNOV, A. G. FOMICHEV and A. N. ROMASHOV, The O. Schmidt Institute of Physics of the Earth, USSR Academy of Sciences, Moscow

Poly-Picture Flash Photography; Loop Fastax Camera for Relatively Unpredictable Events
G. L. LUNN and C. E. CORNISH, United Kingdom Atomic Energy Authority, Aldermaston, Berkshire, England

Techniques of Color Schlieren
L. L. SMITH and J. H. WADDELL, McDonnell Douglas Astronautics Co., El Segundo, CA

Problems of Precision Measurements of Time Intervals Between Exposure Moments
G. I. MISHIN and V. N. BORISOF, The A. F. Ioffe Physical-Technical Institute, USSR Academy of Sciences, Leningrad

THURSDAY EVENING
1900–2000 PRE-DINNER RECEPTION
2000–2400 DINNER DANCE

Announcement of time and place for the 10th Congress
Presentation of the Hubert Schardin Medal by Dr. Rudi Schall, Chairman of the Schardin Award Committee

FRIDAY MORNING—AUGUST 7
0800–1700 REGISTRATION
0900–1200 APPLICATIONS II

Method of Recording Three Simultaneous Variables Using a Streak Camera
G. S. F. ORSTEN, University of Massachusetts, Amherst

The Starting Process in a Shock-Tube Reflection Nozzle
H. O. AMANN, Ernst-Hach-Institut der Fraunhofer-Gesellschaft, Freiburg, Germany

High-Speed Photographic Study of Liquid Jet Breakup in a Supersonic Airstream
EDWARD A. KUSH, JR., and JOSEPH A. SCHETZ, Aerospace Engineering Dept., Virginia Polytechnic Institute, Blacksburg, VA

The Recording of Plastic-Wave Propagation in High-Velocity Tensile Tests on Steel
W. L. KORBEE, H. J. M. VAN RONGEN and F. E. VAN WELY, Metal Research Institute TNO, Delft, The Netherlands

The Melting and Evaporation of Solids by Impact
L. V. BELYAKOV, V. P. VALITSKII, N. A. ZLATIN and S. M. MOCHALOV, A. F. Ioffe Physical Technical Institute, Academy of Sciences, Leningrad, USSR

High-Speed Photographic, Photoclastic and Strain-Gage Studies of Transient Stresses
PAUL D. FLYNN, Pitman-Dunn Research Laboratories, Frankford Arsenal, Philadelphia, PA

A New Method of Visualizing and Measuring Hypersonic Wakes: A Schlieren Arrangement Using Amplitude Subtraction
J. ROYER, Institut Franco-Allemand de Recherches St-Louis, France

Quantitative Schlierography of Hypersonic Wakes at Low Pressure Using a Double Traversing Polarized Light Beam
R. ALBE, P. SMIGIELSKI, L. R. OUDIN and M. JEANMAIRE, Institut Franco-Allemand de Recherches Saint-Louis, France

Electron-Beam Imaging of Glass Microspheres Simulating Meterorites
F. JAMET and G. HERBETTE, Institut Franco-Allemand de Recherches de Saint-Louis, France

Mathematical and Experimental Analysis of Light Diffraction on Plane Shock Waves
H. J. PFEIFER, H. D. VOM STEIN and B. KOCH, Deutsch-Französisches Forschungsinstitut Saint-Louis, France

Complementary Use of the Spectrograph and the Spectrophotometer in Detonation Temperature Measurements
C. MALAVAL and A. T. CONZE, Centre d'Etudes de Gramat, France

Spark Photography of Models in Free Flight in a Hypersonic Shock Tunnel
R. J. NORTH, National Physical Laboratory, Teddington, Middlesex, England

Very-High-Speed Photographic Studies of Laser-Ignited Particulate Boron
C. M. KELLEY, R. E. WILLIAMS and A. TAKEMOTO, Denver Research Institute and University of Denver, Colorado

FRIDAY AFTERNOON

1400–1700 APPLICATIONS III

The Application of High-Speed Photography to the Analysis of Flow in Cavitation and Drop-Impact Studies
J. H. BRUNTON and J. J. CAMUS, University of Cambridge, England

High-Speed Cinematographic Recording of the Wake Behind Hypervelocity Projectiles
A. STILP and W. MERZKIRCH, Ernst-Mach-Institut, Freiburg, Germany

Mach Effect on Cylinders
WERNER HEILIG, Ernst-Mach-Institut, Freiburg, Germany

Shock-Wave Attenuation by Perforated Walls
H. REICHENBACH, Ernst-Mach-Institut, Freiburg, Germany

The Initiation and Growth of Explosion in Liquids
G. D. COLEY and J. E. FIELD, Cavendish Laboratory, Cambridge, England

The Initiation of Explosion in Single Crystals by Collapsing Bubbles
M. M. CHAUDHRI and J. E. FIELD, Cavendish Laboratory, Cambridge, England

High-Speed Shadow Optics Investigation of the Transient Behavior of Air- and Liquid-Filled Cylindrical Shells Under Radial Impact
E. HÄUSLER, D. RAUCH and V. SCHMITZ, Universität des Saarlandes, Saarbrücken, Germany

Study of a Very Low Jitter Spark-Gap: Application to the Realization of a High-Speed Camera Using a Biplanar Shutter Tube With Exposure Time of 0.3 NS
H. BACCHI and J. C. PAUWELS, Laboratories d'Electronique et de Physique Appliqué, Limeil-Brévannes, France

High Gain and Short Exposure Time With a New Image Intensifier Using a Microchannel Electron Multiplier
G. ESCHARD, J. GRAF and R. POLAERT, Laboratories d'Electronique et de Physique Appliquée Limeil-Brévannes, France

Construction of a Shutter Tube Operating With an Exposure Time Below 300 PS
G. CLEMENT, G. ESCHARD, J. P. HAZAN and R. POLAERT, Laboratories d'Electronique et de Physique Appliquée, Limeil-Brévannes, France

The Use of Ferromagnetic Films in the Photography of High-Speed Processes
B. M. STEPANOV and V. A. FABRIKOV, P. N. Lebedev Physical Institute, Academy of Sciences, USSR

Recent Developments on the Chronometry of Multiple Intervals of Time
RAYMOND CH. CAPDEVIELLE and PIERRE O. JAMEY, Commissariat à l'Energie Atomique, and CHARLES P. PELTE, Thomas-CSF, Paris

The Design and Applications of a Ballistic Synchro System Using the Imacon Image-Converter Camera
ROGER HADLAND, John Hadland (P.I.) Ltd., Bovingden, Herts., England

A Stereo Synchroballistic Shadowgraph System
KENNETH A. MILLER, Honeywell, Inc., Hopkins, MI