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FOR THE COMMANDER

Raymond L. Loiselle

Raymond L. Loiselle, Lt. Col., USAF
Chief, ESD Lincoln Laboratory Project Office

FOREWORD

Volume 7 of Unclassified Publications of Lincoln Laboratory lists reports published from 15 December 1977 to 15 December 1979, as well as updated information on earlier publications.

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528	Millstone Hill Thomson Scatter Results for 1971	J.V. Evans B.A. Emery J.M. Holt	24 Mar. 1978	
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535	Digital Encoding of Speech and Audio Signals Based on the Perceptual Requirements of the Auditory System	M.A. Krasner	18 June 1979	AD-A077355/6
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4034	Far-Infrared Photoconductivity in High Purity GaAs	G.E. Stillman C.M. Wolfe J.O. Dimmock	Chapter 4 in Semiconductors and Semimetals, Vol. 12, Infrared Detectors (Academic Press, New York, 1977), pp. 169-288
4415	On the Wigner Distribution Function for an Oscillator	R.W. Davies K.T.R. Davies	Ann. Phys. 89, 261 (1975), DDC AD-A050670
4580	Ionospheric Scintillation	R.K. Crane	Proc. IEEE 65, 180 (1977), DDC AD-A063208/3
4598	Bandwidth Specification for Adaptive Optics Systems	D.P. Greenwood	J. Opt. Soc. Am. 67, 390 (1977), DDC AD-A063205/9
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4622	Infrared Third-Harmonic Generation in Phase Matched CO Gas	H. Kildal	IEEE J. Quantum Electron. QE-13, 109 (1977), DDC AD-A063206/7
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4627	Scattering by Multilayered Lossy Periodic Strips With Application to Artificial Dielectrics	L.L. Tsai T-K. Wu J.T. Mayhan	IEEE Trans. Antennas Propag. AP-26, 257 (1978), DDC AD-A058920/0
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4682	A Sequential Approach to Target Discrimination	C.W. Therrien	IEEE Trans. Aerospace Electron. Systems AES-14, 433 (1978), DDC AD-A060927/1
4687	Evidence for Anisotropic Scattering of Short-Period P Phases in the Upper Mantle	D.K. Chowdhury C.W. Frasier	Bull. Seismol. Soc. Am. 68, 609 (1978), DDC AD-A061205/1
4688	Incoherent Scatter Contributions to Studies of the Dynamics of the Lower Thermosphere	J.V. Evans	Revs. Geophys. Space Phys. 16, 195 (1978)
4689	A Modified Cramér-Rao Bound and its Applications	R.W. Miller C.B. Chang	IEEE Trans. Inf. Theory IT-24, 398 (1978), DDC AD-A060855/4

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4692	Variance and Spectra of Angle-of-Arrival and Doppler Fluctuations Caused by Ionospheric Scintillation	R.K. Crane	J. Geophys. Res. 83, 2091 (1978), DDC AD-A060856/2
4695	Digital Speech Networks	B. Gold	Proc. IEEE 65, 1636 (1977), DDC AD-A054568/1
4697	Advances in CO_2 Laser Stabilization Using the 4.3 μm Fluorescence Technique	C. Freed R.G. O'Donnell	Metrologia 13, 151 (1977)
4698	Some Geophysical Applications of Autoregressive Spectral Estimates	T.E. Landers R.T. Lacoss	IEEE Trans. Geosci. Electron. GE-15, 26 (1977), DDC AD-A063418/8
4703	1500-h Continuous cw Operation of Double-Heterostructure GaInAsP/InP Lasers	C.C. Shen J.J. Hsieh T.A. Lind	Appl. Phys. Lett. 30, 353 (1977), DDC AD-A064579/6
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4707	Real-Time Harmonic Pitch Detector	S. Seneff	IEEE Trans. Acoust., Speech, and Signal Processing ASSP-26, 358 (1978), DDC AD-A065033/3
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4709	Selective Black Absorbers Using rf-Sputtered Cr_2O_3/Cr Cermet Films	J.C.C. Fan S.A. Spura	Appl. Phys. Lett. 30, 511 (1977), DDC AD-A063422/0
4710	Micro-Fresnel Zone Plates for Coded Imaging Applications	N.M. Ceglio H.I. Smith	Rev. Sci. Instrum. 49, 15 (1978), DDC AD-A057519/1
4712	Electronics and National Defense	G.P. Dinneen F.C. Frick	Science 195, 1151 (1977), DDC AD-A064508/5
4715	Element Pattern of Dually Polarized Element in Infinite Phased Array	H.J. Stalzer, Jr. J. Shmoys A. Hessel	IEEE Trans. Antennas Propag. AP-26, 347 (1978), DDC AD-A058922/6

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4723	Performance of Phase Comparison Sinusoidal Frequency Shift Keying	L.S. Metzger	IEEE Trans. Commun. COM-26, 1250 (1978), DDC AD-A069315/0
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4728	Flash-Lamp-Excited NdP_5O_{14} Laser	S.R. Chinn W.K. Zwicker	Appl. Phys. Lett. 31, 178 (1977), DDC AD-A063202/6
4729	Propagation of Ultrashort Light Pulses in a Resonant Medium	R.C. Harney	Physica 91A, 469 (1978), DDC AD-A060857/0
4733	A Note on the Hamming Weighting of Linear-FM Pulses	J.J.G. McCue	Proc. IEEE 67, 1575 (1979), DDC AD-A085422/4
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4746	Spectroscopy and Lasing of a High Nd Concentration Al-Phosphate Glass	A. Lempicki R.M. Klein S.R. Chinn	IEEE J. Quantum Electron. QE-14, 283 (1978)
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4786	Collisionless Intramolecular Energy Transfer in Vibrationally Excited SF_6	T.F. Deutsch S.R.J. Brueck	Chem. Phys. Lett. 54, 258 (1978), DDC AD-A058019/1
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4795	Tidal Observations at Millstone Hill for the August 1974 and October 1975 Special Periods	R.H. Wand J.E. Salah	J. Atmos. Terr. Phys. 40, 913 (1978)
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4810	Oriented Crystal Growth on Amorphous Substrates Using Artificial Surface-Relief Gratings	H.I. Smith D.C. Flanders	Appl. Phys. Lett. 32, 349 (1978), DDC AD-A058282/5
4811	Surface Defects and the Electronic Structure of $SrTiO_3$ Surfaces	V.E. Henrich G. Dresselhaus H.J. Zeiger	Phys. Rev. B 17, 4908 (1978), DDC AD-A060934/7
4814	Optical and Electrical Properties of $CdGeAs_2$	G.W. Iseler H. Kildal N. Menyuk	J. Electron. Matér. 7, 737 (1978), DDC AD-A065812/0
4815	Far-IR Heterodyne Radiometric Measurements With Quasioptical Schottky Diode Mixers	H.R. Fetterman P.E. Tannenwald B.J. Clifton C.D. Parker W.D. Fitzgerald N.R. Erickson	Appl. Phys. Lett. 33, 151 (1978), DDC AD-A061203/6
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4817	Alignment of Liquid Crystals Using Submicrometer Periodicity Gratings	D.C. Flanders D.C. Shaver H.I. Smith	Appl. Phys. Lett. 32, 597 (1978), DDC AD-A060862/0
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4826	Thermal Conductivity and Specific Heat of NdP_5O_{14}	S.R. Chinn W.K. Zwicker	J. Appl. Phys. 49, 5892 (1978), DDC AD-A069917/3
4827	Optical Single Sideband Generation at 10.6 μm	G.M. Carter H.A. Haus	IEEE J. Quantum Electron. QE-15, 217 (1979)
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4842	On GLR Detection and Estimation of Unexpected Inputs in Linear Discrete Systems	C.B. Chang K.P. Dunn	IEEE Trans. Automat. Contr. AC-24, 499 (1979), DDC AD-A076431/6
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4853	High Resolution Double Resonance Spectroscopy of SF_6	P.F. Moulton A. Mooradian	In Laser Induced Processes in Molecules, edited by K.L. Kompa and S.D. Smith (Springer-Verlag, New York, 1979), p. 37
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4866	Seismotectonic Implications of Relocated Aftershock Sequences in Iran and Turkey: An Application of the Master Event Technique	J.A. Jackson T.J. Fitch	Geophys. J. R. Astr. Soc. 57, 209 (1979)
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4884	On the Possible Magnetic Field Dependence of the Nickel Carbonylation Rate	R.S. Mehta M.S. Dresselhaus G. Dresselhaus H.J. Zeiger	Surf. Sci. 78, L681 (1978)
4886	Spectral Intensities in the ν_3 Bands of $^{12}CH_4$ and $^{13}CH_4$	M. Dang-Nhu A.S. Pine A.G. Robiette	J. Mol. Spectrosc. 77, 57 (1979), DDC AD-A076741/8
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4889	Valence Alternation Pair Model of Charge Storage in MNOS Memory Devices	C.T. Kirk, Jr.	J. Appl. Phys. 50, 4190 (1979), DDC AD-A076742/6

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4893	Efficient Frequency Tripling of CO_2-Laser Radiation in Tandem $CdGeAs_2$ Crystals	N. Menyuk G.W. Iseler	Opt. Lett. 4, 55 (1979), DDC AD-A069919/9
4894	A Comparison of the Seismicity of Three Regions of the Eastern U.S.	M.A. Chinnery	Bull. Seismol. Soc. Am. 69, 757 (1979)
4895	Extended Measurement and Analysis of the ν_3 Infrared Band of Methane	D.L. Gray A.G. Robiette A.S. Pine	J. Mol. Spectrosc. 77, 440 (1979)
4896	Do Not Use a Chirp to Test a DFT Program	C.M. Rader S.L. Scharf	IEEE Trans. Acoust., Speech, and Signal Processing ASSP-27, 430 (1979), DDC AD-A076460/5
4897	Linear Scan Control of Tunable Lasers Using a Scanning Fabry-Perot	M.J. Coulombe A.S. Pine	Appl. Opt. 18, 1505 (1979), DDC AD-A074034/0
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4904	Optically Pumped LPE-Grown $Hg_{1-x}Cd_xTe$ Lasers	T.C. Harman	J. Electron. Mater. 8, 191 (1979), DDC AD-A069936/3
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4906	Higher-Order Nonlinear Processes in $CdGeAs_2$	H. Kildal G.W. Iseler	Phys. Rev. B 19, 5218 (1979), DDC AD-A073883/1
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4929	Tunable Infrared Lasers	A. Mooradian	Rep. Prog. Phys. 42, 1533 (1979), DDC AD-A084588/3
4930	Crystallographic Orientation of Silicon on an Amorphous Substrate Using an Artificial Surface-Relief Grating and Laser Crystallization	M.W. Geis D.C. Flanders H.I. Smith	Appl. Phys. Lett. 35, 71 (1979), DDC AD-A076745/9
4931	A SAW/CCD Accumulating Correlator	D.L. Smythe R.W. Ralston E. Stern	Appl. Phys. Lett. 34, 620 (1979), DDC AD-A073885/6
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4934	Calculated and Measured Efficiencies of Thin-Film Shallow-Homojunction GaAs Solar Cells on Ge Substrates	J.C.C. Fan C.O. Bozler B.J. Palm	Appl. Phys. Lett. 35, 875 (1979), DDC AD-A085501/5
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4944	Design and Development of a High-Speed Electrooptic A/D Converter	F.J. Leonberger C.E. Woodward D.L. Spears	IEEE Trans. Circuits and Systems CAS-26, 1125 (1979)
4945	Schottky Diode Receivers for Operation in the 100-1000 GHz Region	B.J. Clifton	Radio Electron. Eng. 49, 333 (1979), DDC AD-A084157/7
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4947	Solid Electrolytes Containing Both Mobile and Immobile Alkali Ions	H.Y-P. Hong	Accepted J. Power Sources
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4951	TACS - A Demand Assignment System for FLEETSAT	L.E. Taylor S.L.Bernstein	IEEE Trans. Commun. COM-27, 1484 (1979), DDC AD-A084589/1
4952	VHF and UHF Radar Observations of Equatorial F Region Ionospheric Irregularities and Background Densities	D.M. Towle	Accepted Radio Sci.
4957	Birkhoff's Theorem and Einstein's Equations	R. Pavelle	Phys. Rev. D 19, 2876 (1979)
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4960	Efficient Infrared ac Kerr Switches Using Simple Cryogenic Liquids	S.R.J. Brueck H. Kildal	Appl. Phys. Lett. 35, 665 (1979), DDC AD-A085790/4
4962	Four-Wave Interactions in Acoustoelectric Integrating Correlators	R.W. Ralston E. Stern	Appl. Phys. Lett. 35, 150 (1979), DDC AD-A076466/2

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4970	Mathematical Foundations of Signal Processing	R.B. Holmes	SIAM Rev. 21, 361 (1979)
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4991	Nonlinear Filtering Algorithms for Vector Processing Machines	R.S. Bucy K.D. Senne	Accepted J. Comput. Math. Appl.
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4997	Comments on "Finite Buffer Behavior with Poisson Arrivals and Random Server Interruptions"	C.J. Weinstein	IEEE Trans. Commun. COM-27, 1746 (1979)
4999	Magnetic Phase Dependence of the Nickel-CO Reaction	R.S. Mehta M.S. Dresselhaus G. Dresselhaus H.J. Zeiger	Phys. Rev. Lett. 43, 970 (1979)
5000	Replication of 175-Å Lines and Spaces in Polymethylmethacrylate Using X-Ray Lithography	D.C. Flanders	Accepted Appl. Phys. Lett.
5001	Effects of Narrow-Free-Spectral-Range Etalons of Mode-Locked Lasers	S.R. Chinn	Opt. Commun. 31, 359 (1979), DDC AD-A085783/9
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5010	The Planck Integral Cannot Be Evaluated in Terms of a Finite Series of Elementary Functions	R. Pavelle	Accepted J. Math. Phys.
5012	High-Speed InP Optoelectronic Switch	F.J. Leonberger P.F. Moulton	Appl. Phys. Lett. 35, 712 (1979), DDC AD-A085785/4
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5017	Shallow-Homojunction GaAs Solar Cells with High Resistance to 1-MeV Electron Radiation	J.C.C. Fan R.L. Chapman C.O. Bozler P.J. Drevinsky	Accepted Appl. Phys. Lett.
5019	Doppler-Limited Spectroscopy of the $3\nu_3$ Band of SF_6	A.S. Pine A.G. Robiette	Accepted J. Mol. Spectrosc.
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5026	Collisional Narrowing of HF Fundamental Band Spectral Lines by Neon and Argon	A.S. Pine	Accepted J. Mol. Spectrosc.

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4177	Wavelength-Selective Surfaces	J.C.C. Fan	Chapter 8 in Advances in Chemistry Series, No. 163: Solid State Chemistry of Energy Conversion and Storage, J.B. Goodenough and M.S. Whittingham, Eds. (American Chemical Society, New York, 1977), pp. 149-164
4177E	Wavelength-Selective Surfaces for Solar Energy Utilization	J.C.C. Fan	Proc. SPIE Vol. 85: Optics in Solar Energy Utilization II (Society of Photo-Optical Instrumentation Engineers, Bellingham, Washington, 1976), pp. 39-46, DDC AD-A063414/7
4178	New Solid Electrolytes	H.Y-P. Hong	Chapter 10 in Advances in Chemistry Series, No. 163: Solid State Chemistry of Energy Conversion and Storage, J.B. Goodenough and M.S. Whittingham, Eds. (American Chemical Society, New York, 1977), pp. 179-194, DDC AD-A053925/4
4192	Interferometric Evaluation of the Imaging Characteristics of Laser Beams Propagated Through the Turbulent Atmosphere	D. Kelsall	Phot. Sci. Eng. 21, 123 (1977), DDC AD-A063203/4
4229	Solar Energy Application of Natural Zeolites	D.I. Tchernev	In Natural Zeolites: Occurrence, Properties, Use, edited by L.B. Sand and Mumpton (Pergamon Press, Oxford and New York, 1978), pp. 479-485
4255	Long-Path Monitoring with Tunable Lasers	E.D. Hinkley R.T. Ku	Proc. 8th IMR Symp., Gaithersburg, Maryland, 20-24 September 1976, pp. 291-294
4271	X-Ray Lithography	H.I.Smith D.C. Flanders	Jpn. J. Appl. Phys. 16, Suppl. 16-1, 61 (1977), DDC AD-A063294/3

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4287	Recent Developments in the Use of Tunable Semiconductor Lasers for Molecular Pollutant Detection	E.D. Hinkley R.T. Ku	In Environmental Analysis (Academic Press, New York, 1977), pp. 161-173
4299	Real Time Digital Recording of Thermovision Data	R. Cordova R.R. Parenti	Proc. 3rd Biennial Infrared Information Exchange, St. Louis, Missouri, 24-26 August 1976, pp. 191-197
4366	A Linear-Filtering Transform Algorithm Based on Permutations	C.M. Rader P.F. McKenzie	IEEE-ASSP Intl. Conf. Record, 9-11 May 1977, pp. 45-48, DDC AD-A063199/4
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4436	Photoemission Studies of Molecular Adsorption on Oxide Surfaces	V.E. Henrich	In Inelastic Electron Tunneling Spectroscopy, T.F. Wolfram, Ed. (Springer-Verlag, New York, 1978), p. 160
4437	Alignment of X-Ray Lithography Masks Using a New Interferometric Technique - Experimental Results	S. Austin H.I. Smith D.C. Flanders	J. Vac. Sci. Technol. 15, 984 (1978), DDC AD-A065029/1
4438	Polyimide Membrane X-Ray Lithography Masks - Fabrication and Distortion Measurements	D.C. Flanders H.I. Smith	J. Vac. Sci. Technol. 15, 995 (1978), DDC AD-A061201/0
4452	How Many Physically Significant Solutions Are There to the Self-Induced Transparency Equations?	R.C. Harney	In Coherence and Quantum Optics IV (1978), edited by L. Mandel and E. Wolf (Plenum, New York, 1978), pp. 781-788, DDC AD-A065030/9
4473	Measurement of m_b With a Global Network	M.A. Chinnery	Tectonophysics 49, 139 (1978), DDC AD-A065031/7

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4545	Filter with Bandwidth Continuously Variable from 5 to 100 MHz	J. Melngailis R.C. Williamson R.H. Domnitz	1977 Ultrasonics Symposium Proceedings (IEEE, New York, 1977), pp. 965-968, DDC AD-A057514/2
4577	High Na^+-Ion Conductivity in $Na_5YSi_4O_{12}$	H.Y-P. Hong J.A. Kafalas M.L. Bayard	Proceedings of the 28th Power Sources Symposium (Electrochemical Society, Princeton, New Jersey, 1979), p. 1
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4589	High-Efficiency GaAs Shallow-Homojunction Solar Cells	J.C.C. Fan C.O. Bozler	In Thirteenth IEEE Photovoltaic Specialists Conference - 1978 (IEEE, New York, 1978), pp. 953-955
4590	Selective-Black Absorbers Using Sputtered Cermet Films	J.C.C. Fan	Thin Solid Films 54, 139 (1978), DDC AD-A069423/2
4604	Automated Tracking for Aircraft Surveillance Radar Systems	R.M. O'Donnell C.E. Muehe	IEEE Trans. Aerospace Electron. Systems AES-15, 508 (1979)
4615	Radiometers for Measurements of Space Objects	F.L. McNamara W.E. Krag	Proc. SPIE Vol. 156: Modern Utilization of Infrared Technology IV, I.J. Spiro, Ed. (Society of Photo-Optical Instrumentation Engineers, Bellingham, Washington, 1978), pp.132-141, DDC AD-A069927/2

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4624	The Ground-Based Electro-Optical Detection of Deep-Space Satellites	R. Weber	Proc. SPIE Vol. 143: Applications of Electronic Imaging Systems, R.E. Franseen and D.E. Schroder, Eds. (Society of Photo-Optical Instrumentation Engineers, Bellingham, Washington, 1978), pp. 59-69
4627	A Tactical 10.6 μm Imaging Radar	R.J. Hull S. Marcus	Proceedings of the IEEE 1978 National Aerospace and Electronics Conference (IEEE, New York, 1978), pp. 662-668
4651	Acoustoelectric Surface Wave Devices for Programmable Signal Processing	J.H. Cafarella	1978 IEEE International Symposium on Circuits and Systems Proceedings (IEEE, New York, 1978), pp. 392-399
4654	Advances in GaAs Schottky Diode Submillimeter Heterodyne Receivers and Radiometers	P.E. Tannenwald	Proc. AGARD Conf. No. 245, Millimetre and Submillimetre Wave Propagation and Circuits, Munich, Germany, 4-8 September 1978, p. 17-1
4689	New Applications of Submicrometer Structures in Materials Science and Biology	H.I. Smith D.C. Flanders D.C. Shaver	Proc. Scanning Electron Microscopy '78, Los Angeles, 17-21 April 1978, Vol. I, pp. 33-40, DDC AD-A061204/4
4709	Performance Requirements for Analog Signal Processors in Radar and Communications Systems	E. Stern	Proc. SPIE Vol. 154: Real-Time Signal Processing, T.F. Tao, Ed. (Society of Photo-Optical Instrumentation Engineers, Bellingham, Washington, 1978), pp. 174-180, DDC AD-A069932/2
4715	On-Board Satellite Signal Processing	L.S. Metzger	Proc. IEEE Natl. Telecommunications Conf., Birmingham, Alabama, 4-6 December 1978, pp. 8.1.1-8.1.5, DDC AD-A069914/0
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4753A	Emission Cross Section and Flashlamp-Excited NdP_5O_{14} Laser at 1.32 μm	M.M. Choy W.K. Zwicker S.R. Chinn	Proc. Intl. Conf. on Lasers '78, Orlando, Florida, 11-15 December 1978, pp. 163-167
4754	LPE Growth of Nominally Undoped InP and $In_{0.8}Ga_{0.2}As_{0.6}P_{0.5}$ Alloys	S.H. Groves M.C. Plonko	Chapter 1 in Gallium Arsenide and Related Compounds (St. Louis) 1978 (The Institute of Physics, London, 1979), pp. 71-77, DDC AD-A072649/7
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