Subject Index for Papers in Volume 25

Each index term below is accompanied by a page number and an author's name. With that name in the Author Index are the title of the paper and the names of coauthors, if any. Communications are identified by (C).

tions are identified by (C).		
Subject	Author	Page
Air films Air flow attraction force	Paivanas	176
Algorithms Algebraic complexity theory	Pippenger	825
Finite-element analysis of semicon- ductor devices	Buturla	218
Fleshing out projections	Wesley	934
Microprocessor-based modem	Godard	17
Number of vias in chip	Lee	261
Number representation converter (C)	Bongiovanni	83
Analytical models Approximate queueing network solu-		
tions	Sauer	894
Computer performance modeling in IBM	Bard	562
Coupled lossy transmission lines	Gruodis	25
Finite-element analysis of semicon-	5.454. 5	
ductor devices	Buturla	218
For energy and environmental	T71 44	571
phenomena	Flatt	571
Message channel delay Spectrum analysis of miss ratios	Calo Voldman	915 877
Statistics of breakdown	Shatzkes	167
	Dimillio	10,
Arithmetic and logical unit design	Doobo	262
Architecture of early IBM computers High-speed binary adder	Bashe Ling	363 156
Logic synthesis	Darringer	272
System/360 architecture and beyond	Padegs	377
Character recognition Chinese character recognition	Yhap	187
-	•	
Chemistry and chemical engineering Complex computations in chemistry	Danus	702
and physics Conducting polymers	Bagus Street	793 51
Phase transitions	Müller	811
Pi-donor complexes	Kaufman	303
[Pt]polypyrrole electrodes	Diaz	42
Semiconductor science at IBM	Keyes	779
Simulation of complex chemical systems	Clementi	315
	Clementi	313
Communications and communication networks		
Collision-free network performance IBM data communications, evolution	Hamacher	904
and progress	Jarema	391
Message channel delay	Calo Stroebel	915 930
Message re-assembly times (C) Microprocessor-based modem	Godard	930 17
Network problem-determination	Huon	3
Compilers and interpreters		
Formal semantics definition	Lucas	549 535
History of language processors	Allen	535
History of programming languages Memory management	Sammet Belady	520 491
Alemoi y management	Dollary .	771

	Complexity theory First-order logic is NP-complete (C)	Kozen	327
	Computational methods	Dimmonoon	825
	Algebraic complexity theory Complex computations in chemistry	Pippenger -	
	and physics Computer simulations of complex chemical systems Modeling energy and environmental phenomena Semiconductor analysis using finite	Bagus	793
		Clementi	315
		Flatt	571
	elements Statistics of breakdown	Hachtel Shatzkes	232 167
	Computer applications	Similaros	107
	Complex computations in chemistry and physics	Bagus	793
	Computer simulations of electron	•	
micrographs Modeling energy and environmental	Krakow	58	
	phenomena Simulations of complex chemical sys-	Flatt	571
	tems Tomographic reconstruction of ultra-	Clementi	315
	sonic images	Pan	71
	Computer-controlled manipulators Robot program emulatory	Meyer	955
C	Computer organization and design Architecture of early IBM computers Low-end general-purpose systems at	Bashe	363
	IBM Small real-time IBM systems	Taylor Harrison	429 441
	System/360 architecture and beyond	Padegs	377
	Computer performance analysis Computer performance modeling in IBM	Bard	562
	Design automation		
	Design automation in IBM	Case Wesley	631 934
	Fleshing out projections Graphics for modeling solids	Fitzgerald	281
	Logic synthesis	Darringer	272
	Number of vias on a chip	Lee	261
	Disk files Innovation in disk files	Harker	677
	Diskette drives		
	Disk file manufacturing Diskette and diskette drive	Mulvany Engh	711 701
	Display technology	_	
	IBM data communications, evolution and progress	Jarema	391
	Electrical packaging technology		
	Coupled lossy transmission lines	Gruodis	25
	Design automation in IBM	Case	631
	Electronic packaging in IBM Improving productivity of VLSI de-	Seraphim	617
	signs Number of vias on a chip	Logue Lee	107 261
	Electrophotography		
	Laser printing	Elzinga	767
	Error control codes		
	Reliability, availability, and service- ability of IBM computer systems	Hsiao	453

Error detection, correction, and recov-	•		Magnetic bubble technology		
ery Reliability, availability, and service-			1-µm bubbles in contiguous disk devices	T.,	205
ability of IBM computer systems	Hsiao	453	Number representation converter (C)	Ju Bongiovanni	295 83
Fabrication			Magnetic head/disk interaction		
Semiconductor manufacturing in IBM	Harding	647	Disk and diskette drive	Engh	701
Flexible-disk technology			Disk file manufacturing Innovation in disk files	Mulvany	711
Diskette and diskette drive	Engh	701	Innovation in disk files Innovation tape subsystems	Harker Harris	677
	g	701	Magnetic recording	Stevens	691 663
Graphics Fleshing out projections	Wasley	024			
For modeling solids	Wesley	934	Magnetic sensors		
Robot program emulator	Fitzgerald Meyer	281 955	Magnetic sensor semiconductor de-		
Robot program emulator	Meyel	933	vice (C)	Vinal	196
Ink jet printing			Manufacturing technology		
Liquid drop impact	Bechtel	963	Semiconductor manufacturing in IBM	Harding	647
Integrated circuit design					
A 1025-byte ECL memory	Dorler	126	Materials		
A 5000-circuit VLSI gate array	Dansky	116	Conducting polymers	Street	51
Coupled lossy transmission lines	Gruodis	25	Electronic packaging in IBM	Seraphim	617
Delay regulation for power/perform-			Phase transitions	Müller	811
ance tradeoffs	Berndlmaier	135	Pi-donor complexes	Kaufman	303
Design automation in IBM	Case	631	[Pt]polypyrrole electrodes	Diaz	42
Electronic packaging in IBM	Seraphim	617	Semiconductor science at IBM	Keyes	779
High-density bipolar masterslice	Chen	142		-	
Logic technology in IBM	Rymaszewski	603	Mathematics (applied)		
Memory development in IBM	Pugh	585	Air flow attraction force	Paivanas	176
Wire length distribution in logic			Algebraic complexity theory	Pippenger	825
placement	Donath	152	Design of experiments	Schatzoff	848
			First-order logic is NP-complete (C)	Kozen	327
I/O devices			High-speed binary adder	Ling	156
Chinese character recognition	Yhap	187	Impact of liquid drop	Bechtel	963
7/0			Network performance analysis	Hamacher	904
I/O technologies			Semiconductor analysis using finite		
Laser/electrophotographic printing	***		elements	Hachtel	232
technology	Elzinga	767	Simulation run length control	Heidelberger	860
Printer technology in IBM	Nickel	755	Spectrum analysis of miss ratios Tomographic reconstruction of ultra-	Voldman	877
Large-scale integration			sonic images	Pan	71
A 1025-byte ECL memory	Dorler	126	Wire length distribution in logic	raii	/1
A 5000-circuit VLSI array	Dansky	116	placement	Donath	152
Delay regulation for power/perform-	•		placement	Donath	132
ance tradeoffs	Berndlmaier	135	Mechanics and mechanisms		
High-density bipolar masterslice	Chen	142	IBM typewriter innovation	Beattie	729
Improving productivity of VLSI de-			Laser/electrophotographic printing	Deattie	123
signs	Logue	107	technology	Elzinga	767
Wire length distribution in logic			Printer technology in IBM	Nickel	755
placement	Donath	152			
Lasers			Medical electronics		
Laser/electrophotographic printing	Elzinga	767	Tomographic reconstruction of ultra-	ъ.	
Semiconductor science at IBM	Keyes	779	sonic images	Pan	71
Lithography			Memory design and technology		
Pi-donor complexes	Kaufman	303	1-μm bubbles in contiguous disk de-		
r-donor complexes	Kauliliali	303	vices	Ju	295
Logic design and technology			A 1024-byte ECL memory	Dorler	126
Improving productivity of VLSI de-			Improving productivity of VLSI de-		
signs	Logue	107	signs	Logue	107
Logic synthesis	Darringer	272	Memory development in IBM	Pugh	585
Logic technology in IBM	Rymaszewski	603			
			Memory management		
LSI chip design automation			History in IBM	Belady	491
A 5000-circuit VLSI gate array	Dansky	116	MVS	Auslander	471
Design automation in IBM	Case	631	VM/370	Creasy	483
Logic synthesis	Darringer	272			
Number of vias on a chip	Lee	261	Microprocessor-based applications		
Wire length distribution in logic	.		Microprocessor-based modem	Godard	17
placement	Donath	152	Network problem-determination	Huon	3

992

Models and modeling			Real-time systems		
Approximate queueing network solu- tions	Sauer	894	IBM real-time systems for federal applications	Olsen	405
Computer performance modeling in	Sauci	02 4	IBM real-time systems for manned	Oiscii	405
IBM	Bard	562	spaceflight	James	417
Computer simulation of electron mi-			Small real-time IBM systems	Harrison	441
crographs	Krakow	58			
Coupled lossy transmission lines	Gruodis	25	Reliability		
Energy and environmental phenomena Finite-element analysis of semicon-	Flatt	571	Reliability, availability, and service-		
ductor devices	Buturla	218	ability of IBM computer systems	Hsiao	453
Message channel delay	Calo	915	Comingnehistan davies analysis		
Semiconductor analysis using finite		,	Semiconductor device analysis Finite-element analysis	Buturla	218
elements	Hachtel	232	Time-cichicht analysis	Dutuila	410
Office machines and systems			Semiconductor technology		
IBM typewriter innovation	Beattie	729	Logic technology in IBM	Rymaszewski	603
IBM word processing development	May	741	Memory development in IBM	Pugh	585
• •	,		Semiconductor analysis using finite		
Operating systems			elements	Hachtel	232
Data base technology	McGee	505	Semiconductor manufacturing in IBM	•	647
Memory management MVS	Belady Auslander	491 471	Semiconductor science at IBM Statistics of breakdown	Keyes Shatzkes	779 167
VM/370	Creasy	483	Statistics of breakdown	Silatzkes	167
7 172 5 7 0	Crousy	405	Signal processing		
Optimization of object programs			Microprocessor-based modem	Godard	17
History of language processors	Allen	535	•		
Performance analysis			Simulation		
Collision-free networks	Hamacher	904	Computer simulation of complex		
Design of experiments	Schatzoff	848	chemical systems Computer simulation of electron	Clementi	315
Message channel delay	Calo	915	micrographs	Krakow	58
Message re-assembly times (C)	Stroebel	928	Robot program emulator	Mever	955
Simultaneous resource possession	Sauer	892	Run length control	Heidelberger	860
Spectrum analysis of miss ratios	Voldman	877	· ·		
Physics and physical chemistry			Solid state physics		
Complex computations in physics and			Conducting polymers	Street	51
chemistry	Bagus	793	Pi-donor complexes	Kaufman	303
Phase transitions	Müller	811	[Pt]polypyrrole electrodes	Diaz	42
Semiconductor analysis using finite elements	Hachtel	232	Statistics		
Statistics of breakdown	Shatzkes	167	Design of experiments	Schatzoff	848
		107	Simulating run length control	Heidelberger	860
Polymers	.				
Conducting polymers	Street	51	Storage device technology		
[Pt]polypyrrole electrodes	Diaz	42	1-μm bubbles in contiguous disk de-	•	205
Printing technology			vices	Ju	295
IBM typewriter innovation	Beattie	729	Storage devices and systems		
IBM word processing development	May	741	1-µm bubbles in contiguous disk de-		
Laser/electrophotographic printing	173 •	5.5	vices	Ju	295
technology Printer technology in IBM	Elzinga Nickel	767 755	A 1024-byte ECL memory	Dorler	126
Time technology in 15W	NICKEI	133	Cache miss ratio analysis	Voldman	877
Programming and programming lan-			Disk file manufacturing Disk or diskette drives	Mulvany	711
guages	_		Evolution of magnetic storage	Engh Stevens	701 663
Formal definition of semantics	Lucas	549	Innovation in disk files	Harker	677
History of data base technology History of IBM languages	McGee Sammet	505	Innovations in tape subsystems	Harris	691
History of language processors	Allen	520 535	Memory development in IBM	Pugh	585
instally of language processors	Amen	333	Memory management	Belady	491
Programming systems development			Commence of the Africa		
IBM real-time systems for federal	01	46.7	Superconductivity Conducting polymers	Straat	<i>5</i> 1
applications IBM real-time systems for manned	Olsen	405	Conducting polymers	Street	51
spaceflight	James	417	System architecture and development		
MVS	Auslander	41 / 471	Architecture of early IBM computers	Bashe	363
VM/370	Creasy	483	IBM data communications, evolution		
One of all	•		and progress	Jarema	391
Queueing theory	C-1-	012	IBM real-time systems for federal		
Message channel delay Network performance analysis	Calo Hamacher	913 902	applications	Olsen	405
Simultaneous resource possession	Sauer	902 894	IBM real-time systems for manned spaceflight	James	417
poodsout		021	oparament		417

993

Low-end general-purpose systems at			Small real-time IBM systems	Harrison	441
IBM	Taylor	429	System/360 architecture and beyond	Padegs	377
Reliability, availability, and service-			VM/370	Creasy	483
ability of IBM computer systems	Hsiao	453			
Small real-time IBM systems	Harrison	441	Tape drives		
System/360 architecture and beyond	Padegs	377	Innovations in tape subsystems	Harris	691
Systems architecture			To the communication of		
Architecture of early IBM computers	Bashe	363	Telecommunications		
Cache miss ratio analysis	Voldman	877	IBM data communications, evolution	T	391
History of data base technology	McGee	505	and progress	Jarema	391
History of memory management	Belady	491			
Low-end general-purpose systems at			Word processing		
IBM	Taylor	429	IBM word processing development	May	741