

Scientific Program of IFIP Congress 62

MUNICH

August 27 to September 1, 1962

27 th August

Morning Session 10.00-12.30

Opening Session

Chairman: A. Walther, Germany

Vice-Chairman: H. Piloty, Germany

Welcome to the Conference

Introduction of dignitaries on platform

S. Balke, Bundesminister

O. Schedl, Bavarian Minister

H. J. Vogel, Oberbürgermeister of Munich

A. Walther, Germany. Spectrum of Information Processing.

I. L. Auerbach, USA. Impact of Information Processing on Mankind

Afternoon Session: 14.30-17.30

Session 1: Business Data Processing I

Chairman: S. Gill, UK

Vice-Chairman: B. Langefors, Sweden

Invited paper:

Grace H. Hopper, USA. Business Data Processing—A Review

D. W. Hooper, UK. Integrated Information Processing for Management of Nationalized Industries

Submitted papers:

R. Hindle, UK. Data Processing in English Banks

A. Leigh, Canada. Computer Uses at Lamp Department, Canadian General Electric

Session 11: Automata Theory

Chairman: H. D. Huskey USA

Vice-Chairman: A. van Wijngaarden, Netherlands

Invited paper:

A. W. Burks, USA. Automata Theory

Submitted papers:

C. A. Petri, Germany. Fundamentals of a Theory of Asynchronous Information Flow

J. Becvar, CSSR. Finite and Combinatorial Automata, Turing Automata with a Programming Tape

L. J. Fogel, USA. Toward Inductive Inference Automata

E. A. Feigenbaum & H. A. Simon, USA

Generalization of an Elementary Perceiving and Memorizing Machine

Session 30: Symposium on Mixed Analog-Digital Systems

Organizer: J. Carteron, France

Session 45: Symposium on Fast Memory Technology

Organizer: J. Rajchman, USA

Session 46: Symposium on Multiprogramming

Organizer: P. Dreyfus, France

28 th August

Morning Session: 9.00-12.00

Session 2: Business Data Processing II

Chairman: E. Mutch, UK

Vice-Chairman: P. Laasonen, Finland

Invited paper:

J. A. Gosden & R. L. Sisson, USA

Standardized Comparisons of Computer Performance

Submitted papers:

W. C. Carter, USA. Mathematical Analysis of Merge-Sorting Techniques

J.P. Jeannot & P.J. Sandiford, Canada Some Airline Applications of Monte-Carlo System Simulations

C. C. Gotlieb, Canada. The Construction of Class-Teacher Time-Tables

A. Vazsonyi, USA. Extending Management Capability by Electronic Computers

Session 18: System Design I

Chairman: H.R.G. Grosch, Monte Carlo

Vice-Chairman: H. Takahashi, Japan

Submitted papers:

H. Gumin & F. K. Kroos, Germany. A Very Small Electronic Digital Computer with Stored Program Control

F. H. Sumner, G. Haley & E. C. Y. Chen, UK. The Central Control Unit of the "Atlas" Computer

A. Avizienis, USA. On a Flexible Implementation of Digital Computer Arithmetic

M. Lehman, Israel. A Comparative Study of Propagation Speed-Up Circuits in Binary Arithmetic Units

A. Svoboda, CSSR. An Algorithm for Division

Session 31: Panel on Numerical Control of Machine Tools

Organizer: D. T. Ross, USA

Session 33: Symposium on Modern Techniques of Language Translation

Organizer: A. Sestier, France

Session 35: Symposium on Coding Theory

Organizer: H. C. A. van Duuren, Netherlands

Afternoon Session: 14.30-17.30

Session 4: partial Differential Equations

Chairman: H. H. Goldstine, USA

Vice-Chairman: P. Ercoli Italy

Invited paper:

A. A. Dorodnicyn, USSR. Partial Differential Equations of the Mixed Type and Methods of Their Solution

Submitted papers:

M. Engeli & P. Läuchli, Switzerland. Difference Equations for Elliptic Boundary Value Problems

D. J. Evans, UK. Numerical Studies of Implicit Iterative Methods for Solving Partial Difference Equations of Elliptic Type

L. Guerri, Euratom. Numerical Calculation of Shock Waves

Bella Kotkin, USA. A Mathematical Model of Drug Distribution and the Solution of Difference Equations

Session 19: System Design II

Chairman: Y. Bar-Hillel, Israel

Vice-Chairman: J. Kryze, CSSR

Submitted papers:

J. Oblonsky & A. Svoboda, CSSR. Design of a Data-Processing System with Built-in Time Sharing

R. J. Preiss, USA. An Experimental System for Logic Design, Data Accumulation and Retrieval

H. Hagiwara, K. Amo, S. Matsushita and H. Yamauchi, Japan. The KT Pilot Computer, Microprogrammed Computer with a Phototransistor Fixed Memory

S. Takahashi, H. Nishino, K. Yoshihiro and K. Fuchi, Japan. System Design of the ETL Mk-6 Computer

R. H. Allmark & J. R. Lucking, UK. Design of an Arithmetic Unit Incorporating a Nesting Store

I. O. Kerner, Germany. Modern Programming Methods and Problems and their Influence on the Design of Computing Instruments

Session 36: Symposium on Pattern Recognition

Organizer: A. L. Samuel, USA

Session 32: Symposium on Advanced Methods in Information Storage and Retrieval

Organizer: J. G. Santesmases, Spain

Session 34: Panel on Semantics and Syntactics

Organizer: A. G. Oettinger, USA

Session 21: Equipment I

Chairman: II. Billing, Germany

Vice-Chairman: W. W. Leutert, USA

Submitted papers:

G. M. Amdahl, IBM. Computer Designs of the Near Future

D. D. Willard, AMPEX. A Large Scale, Error Correction Tape Memory System

G. Wells, AMPEX. The Design of a Large 1.5 Microsecond Memory System

H. Riedle, NCR. Magnetic Card Random Access Memory

29 th August

Morning Session: 9.00-12.00

Session 3: Algebra

Chairman: S. Comét, ICC

Vice-Chairman: L. Lukaszewicz, Poland

Submitted papers:

H. Rutishauser, Switzerland. On a Modification of the *QD*-Algorithm with Graeffe-Type Convergence

N. Gastinel, France. Sur Certains Procédés Itératifs non Linéaires de Résolution de Systèmes d'Equations du 1er Degré

A. Korganoff, France. Les Polynômes d'Interpolation de Matrices Carrées à Coefficients Matriciels et les Méthodes Itératives de Résolution Numériques des Equations de Matrices Carrées de Forme Quelconque

P. H. Blundell, UK. A Method for Solving Simultaneous Polynomial Equations

E. L. Wachspress, USA. Strategy for Multidimensional Neutron Group Diffusion Computations

J. L. Howland, Canada. On Some Methods for Computing the Roots of Polynomials

Session 20: Switching Theory

Chairman: S.N. Alexander, USA

Vice-Chairman: H. Zemanek, Austria

Invited paper:

E. J. Mc Cluskey, USA. Pulse Mode and Fundamental Mode Operations of Sequential Circuits

Submitted papers:

M. B. Wells, USA. Application of a Finite Set Covering Theorem to the Simplification of Boolean Function Expressions

G. Hotz, Germany. Digital Filters with Threshold Elements

P. Ercoli & L. Mercurio, Italy. Threshold Logic with One or more than One Threshold

E. Goot & H. Takahashi, Japan. Some Theorems Useful in Enumerating Threshold Logic for Boolean Functions

Session 29: Symposium on Data Reduction

Organizer: B. Langefors, Sweden

Session 28: Symposium on Industrial Simulation

Organizer: G. Bretschneider, Germany

Session 38: Symposium on Artificial Intelligence

Organizer: M. Minsky, USA

Afternoon Session: 14.30-17.30

Session 5: Differential and Integral Equations

Chairman: R. Inzinger, Austria

Vice-Chairman: A. A. Dorodnicyn, USSR

Invited paper:

P. Wynn, Netherlands. Acceleration Techniques in Numerical Analysis, with Particular Reference to Problems in One Independent Variable

Submitted papers:

J. Kuntzmann, France. Nouvelle Méthode pour l'Integration Approchée des Equations Différentielles

J. Arsac, France. Recherche des Solutions d'une Equation de Convolution

R. Albrecht & W. Urich, Germany. Solution of the Initial Value Problem for Systems of Quasi-Linear Partial Differential Equations of First Order

Session 12: Machine Learning

Chairman: M. Euwe, Netherlands

Vice-Chairman: E. L. Harder, USA

Invited paper:

A. Newell, USA. Problem Solving, Learning and Generality

Submitted papers:

C. Vossler & L. Uhr, USA. Computer Simulations of a Perceptual Learning Model for Sensory Pattern Recognition, Concept Formation, and Symbol Transformation

V. Kudička, Austria. Self-Organizing Grouping—a Learning Structure

H. C. Ratz & G. H. M. Thomas, Canada. The Development of a Conditional Probability Computer for Control Applications

H. Remus, Germany. Simulation of a Learning Machine for Playing Go

Session 43: Panel on Ultra High-Speed Computers

Organizer: G. M. Amdahl, USA

Session 40: Symposium on Programming Languages

Organizer: R. W. Bemer, USA

Session 22: Equipment II

Chairman: D. L. Thomsen Jr., USA

Vice-Chairman: C. Holland-Martin, UK

Submitted papers:

H. Mertens, Beckmann. High Speed Data Communication

Constanty, CAE. Description of a Wired Interrupt and Priority System Allowing Immediate Action of Outer Events on a Computer Working on Real Time Basis

K. L. Smith & A. S. Finlayson, IBM. Hybrid Arithmetic Techniques in Real Time Control Applications

E. M. Weide, ICT. Production Planning with the ICT 1301

30 th August

Morning Session: 9.00-11.30

Session 6: Optimization Programming

Chairman: Ch. Blanc, Switzerland

Vice-Chairman: R. de Possel, France

Invited Paper:

R. Gomory, USA. Large Linear Programming Problems

Submitted papers:

V. S. Michalewitsch, USSR. Method of Sequential Analysis Variations for Determination of Optimal Solutions

T. Pietrzykowski, Poland. Application of the Steepest Ascent Method to Convex Programming

J. M. Bennett, Australia. A Breakpoint Technique for Network Problems

F. Genuys, France. Application de la Programmation Linéaire en Nombres Entiers à un Problème de Découpe

Session 17: Circuits and Components

Chairman: S. Takahashi, Japan

Vice-Chairman: H. Kaufmann, Germany

Invited Paper:

J. A. Brustman, USA. Past and Future of Digital Computer Circuitry

Submitted papers:

H. J. Harloff, Germany. Size and Speed of thin Magnetic Film Computer Units

U. Hölken, Germany. Ferrite Core Logic in All-Magnetic Technique

M. Alique, J. L. Lloret, I. Santos, M. A. Eced, Spain. New Components for Ferroresonant Circuits

H. H. Glaettli, Switzerland. Hydraulic and Pneumatic Switching Elements

Session 37: Symposium on Biological and Psychological Aspects of Pattern Recognition

Organizer: T. A. Kalin, USA

Session 39: Symposium on Languages for Processor Construction

Organizer: J. Green, USA

Afternoon Session: 14.30-17.30

Session 7: Real Time Information Processing

Chairman: L. de Azcárraga, Spain

Vice-Chairman: M. V. Wilkes, UK

Invited paper:

F. H. Raymond, France. Vue d'ensemble des problèmes fondamentaux du traitement des informations en temps réel

Submitted papers:

L. Casciato, Canada. The Control of Traffic Signals With an Electronic Computer — A New Application of Real-Time Data Processing

A. Debroux, G. P. Del Bigio, A. Gazzano, C. Green, H. d'Hoop, A. Riotte & A. van Wauwe, Euratom. Utilisation of an Analog to Digital Linkage System in a Big Scientific Computing Center

R. B. Stauffer & T. H. Lewis, USA. Met-Watch — a Technique for Processing and Scanning Meteorological Data with a Digital Computer

J. Carpentier, France. Nouvelle Méthode de Calcul du Dispatching Economique d'un Réseau de Transport d'Energie

Session 14: Programming Languages and their Processing

Chairman: P. Naur, Denmark

Vice-Chairman: J. V. Garwick, Norway

Invited paper:

K. Samelson, Germany. Programming Language

ages and their Processing

Submitted papers:

M. Paul, Germany. ALGOL 60 Processors and a Processor Generator

W. M. Keese & H. D. Huskey, USA. An Algorithm for the Translation of ALGOL Statements

S. J. M. Denison, UK. A Proposed ALGOL 60 Matrix Scheme

L. Lombardi, Italy. On Table Operating Algorithms

Session 27: Symposium on Stability of Numerical Calculations

Organizer: G. Dahlquist, Sweden

Session 42: Symposium on Advanced Computer Organization

Organizer: W. F. Bauer, USA

Session 50: Panel on University Education in Information in Processing

Organizer: L. Fein, USA

Session 23: Equipment III

Chairman: P. Dreyfus, France

Vice-Chairman: F. Güntsch, Germany

Submitted paper:

E. N. Adams, IBM. Application of Cryotrons to the High-Speed Computer

P. D. Jones, Ferranti. Atlas Scheduling System

J. Kenny, Honeywell. Automatic Parallel Processing

K. Voitel, Telefunken. Decimal Arithmetic in Parallel Working Computers

M. Hare, Honeywell. A New Approach to Automatic Program Checking

31st August

Morning Session: 9.00-12.00

Session 8: Information Retrieval

Chairman: H. R. Ciancaglini, Argentina

Vice-Chairman: C.-E. Fröberg, Sweden

Invited paper:

A. Kent, USA. Information Retrieval—Review and Prospectus

Submitted papers:

N. S. Prywes & H. J. Gray, USA. The Multi-

List System for Real-Time Storage and Retrieval

J. C. Gardin, France. Le SYNTOL—ses Propriétés et ses Applications en Documentation Automatique

R. M. Needham, UK. A Method for Using Computers in Information Classification

D. R. Swanson, USA. Interrogating a Computer in Natural Language

Session 15: Advanced Programming

Chairman: J. M. Bennett, Australia

Vice-Chairman: F. L. Bauer, Germany

Invited paper:

E. W. Dijkstra, Netherlands. Some Meditations on Advanced Programming

Submitted papers:

A. W. Holt, USA. Program Organization and Record Keeping for Dynamic Storage Allocation

R. Perkins & W.C. McGee, USA. Programmed Control of Multi-Computer Systems

A. Opler, D. Farbman, R. Goldfinger, M. Heit, W. King, H. Landow, E. O'Connor, J. Ogle,

D. Slesinger, USA. Automatic Translation of Programs from one Computer to Another

P. Lucas, Austria. Requirements on a Language for Logical Data Processing

Session 44: Symposium on Switching Theory

Organizer: T. H. Mott jr., USA

Session 47: Symposium on Advanced Components

Organizer: A. P. Speiser, Switzerland

Session 49: Symposium on Optimum Routing in Large Networks

Organizer: M. L. Juncosa, USA

Afternoon Session: 14.30-17.30

Session 9: Linguistic Analysis and Mechanical Translation of Languages

Chairman: R. A. Buckingham, UK

Vice-Chairman: M. Linsman, Belgium

Invited paper:

O. F. Koulagina, USSR. The Use of Computer for Research in Mechanical Translation

Submitted papers:

S. Kuno & A. G. Oettinger, USA. Multiple-

Path Syntactic Analyzer

K. Čulík, ČSSR. On Some Axiomatic Systems for Formal Grammars and Languages

M. Kay, USA. Rules of Interpretation—An Approach to the Problem of Computation in the Semantics of Natural Language

K. G. Sellin, Denmark. Machine Translation and/or an International Language?

Session 10: Digital Communication

Chairman: H. C. A. van Duuren, Netherlands

Vice-Chairman: M. Beltran, Mexico

Invited paper:

E. P. G. Wright, UK. A Survey of Several Aspects of Digital Communication

Submitted papers:

N. Clark & A. C. Gannet, USA. Computer to Computer Communication at 2.5 Megabits/Sec.

E. Rothauser, Austria. Dependence of Speech Quality on Transmitted Information Rate in a Band Compression System

K. Steinbuch & F. Zendej, Germany. Self Correcting Translator Circuits

A. E. Miller, A. B. Shafritz, & J. R. Smith, USA. Message Protection Features of the DATACOM Program

Session 26: Symposium on Matrix Computations

Organizer: A. S. Householder, USA

Session 48: Panel on Priority Problems in Computer Systems

Organizer: M. V. Wilkes, UK

1st September

Morning Session: 9.00-11.30

Session 13: Artificial Perception

Chairman: W. L. van der Poel, Netherlands

Vice-Chairman: J. N. P. Hume, Canada

Submitted papers:

M. G. Saunders, Canada. Digital Computer Usage in Analysis of Electroencephalograph and Similar Quasi-Rhythmic Patterns

B. Julesz, USA. Towards the Automation of Binocular Depth Perception

T. Sakai & S. Doshita, Japan. The Phonetic

Typewriter

W. Slawson, USA. MUSE—A Sound Synthesizer

M. Nadler, France. An Analog-Digital Character Recognition System

L. D. Earnest, USA. Machine Recognition of Cursive Writing

Session 16: Memory Techniques

Chairman: W. Buchholz, USA

Vice-Chairman: H. Feissel, France

Invited Paper:

W. E. Proebster, USA. High-speed Memories

Submitted papers:

J. Scharbert, Germany. Nanosecond Speed in a Core Memory with Non-Destructive Read-Out

J. D. R. McGuillan, UK. Problems in the Design of Magnetic Film Storage Systems Operating at Millimicrosecond Speeds

E. W. Shallow and G. H. Perry, UK. A Read-Out Circuit for High-Speed Non-Destructively Read Stores

S. Takahashi, O. Ishii, K. Nakazawa & K. Murata, Japan. A Tunnel-Diode High-Speed Memory.

Session 25: Panel on Business Systems

Organizer: R. Starreveld, Netherlands

Session 41: Panel on Techniques for ProcessorConstruction

Organizer: H. Rutishauser, Switzerland

Afternoon Session: 14.30-17.00

Session 24: Survey Session

Chairman: I. L. Auerbach, USA

Vice-Chairman: K. Zuse, Germany

Invited Papers:

E. Stiefel, Switzerland. Some Examples of Numerical Methods and the Philosophy behind them

J. McCarthy, USA. Towards a Mathematical Science of Computation

H. Gumin, Germany. Digital Computers, Mathematical Logic and Principal Limitations of Computability