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BIBLIOGRAPHY ON PROVING THE CORRECTNESS
OF COMPUTER PROGRAMS

by

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Preface and Acknowledgments

As this bibliography shows, there is considerable research interest in the topic of proving the correctness of computer programs. Included in the bibliography are all published or unpublished papers, books, reports, theses, etc., known to me that are at all related to the topic. Material cited encompasses very abstract papers dealing with the transformation and equivalence of program schemata; proposals and methods for proving individual programs correct; papers proving the correctness of specific algorithms and programs; and work that has proofs as an incidental part of the paper. In other words, the range is from the very abstract to the very practical. An item is included unless it appeared obvious to me that it did not belong. Thus material of marginal relevance is included.

A complete citation was impossible to obtain for a few items. The best available information is given. An item is in the same language as that of the title, unless otherwise indicated at the end of a citation. Note that the contents of the Russian publication Problemy Kibernetiki appears in English translation as Problems of Cybernetics; similarly Kibernetika appears as Cybernetics. I would be most interested in learning of corrections and additional citations to update the bibliography.

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* BIBLIOGRAPHY ON PROVING THE CORRECTNESS OF COMPUTER PROGRAMS *
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COMPILED BY RALPH L. LONDON, COMPUTER SCIENCES DEPARTMENT
UNIVERSITY OF WISCONSIN, MADISON, WISCONSIN 53706

ABRAHAMS, P.W., MACHINE VERIFICATION OF MATHEMATICAL PROOF, SC. D.
THESIS, MASSACHUSETTS INSTITUTE OF TECHNOLOGY, 1963.
ALSO MATHEMATICAL ALGORITHMS, VOL. 1, NO. 2, APRIL, 1966,
PP. 11-32, VOL. 1, NO. 3, JULY, 1966, PP. 19-38, VOL. 2, 1967,
PP. 28-79 AND VOL. 3, 1968, PP. 28-155.

ALLEN, F.E., PROGRAM OPTIMIZATION, IBM RESEARCH PAPER RC-1599. SEE ALSO
ANNUAL REVIEW OF AUTOMATIC PROGRAMMING, 1969.

ASHCROFT, E.A., FUNCTIONAL PROGRAMS AS AXIOMATIC THEORIES, CENTRE FOR
COMPUTING AND AUTOMATION REPORT NO. 9, IMPERIAL COLLEGE,
LONDON, UNDATED.

BAER, J.L., GRAPH MODELS OF COMPUTATIONS IN COMPUTER SYSTEMS,
DEPARTMENT OF ENGINEERING REPORT NO. 68-46, UNIVERSITY OF
CALIFORNIA AT LOS ANGELES, OCTOBER, 1968.

BALZER, R.M., STUDIES CONCERNING MINIMAL TIME SOLUTIONS TO THE FIRING
SQUAD SYNCHRONIZATION PROBLEM, PH. D. THESIS,
CARNEGIE-MELLON UNIVERSITY, 1966.

BALZER, R.M., AN 8-STATE MINIMAL TIME SOLUTION TO THE FIRING SQUAD
SYNCHRONIZATION PROBLEM, INFORMATION AND CONTROL, VOL. 10,
NO. 1, JANUARY, 1967, PP. 22-42.

BARRON, D.W., RECURSIVE TECHNIQUES IN PROGRAMMING, AMERICAN ELSEVIER,
NEW YORK, 1968.

BASU, S.K., TRANSFORMATION OF PROGRAM SCHEMES TO STANDARD FORMS,
IEEE CONFERENCE RECORD OF THE NINTH ANNUAL SYMPOSIUM ON

SWITCHING AND AUTOMATA THEORY, 1968, PP. 99-105.

BASU, S.K., TRANSFORMATION OF PROGRAM SCHEMES TO STANDARD FORMS,
TECHNICAL REPORT, CARNEGIE-MELLON UNIVERSITY, FEBRUARY, 1968.

BASU, S.K., ON REDUCTION OF PROGRAM SCHEMES, SIAM JOURNAL ON APPLIED
MATHEMATICS, VOL. 16, NO. 2, MARCH, 1968, PP. 328-339.

BEST, S.F., A PROOF THAT A DEMONSTRATION PROGRAM WORKS, JULY, 1967.

BLOCK, H.D., THE PERCEPTRON: A MODEL FOR BRAIN FUNCTIONING I, REVIEWS
OF MODERN PHYSICS, VOL. 34, NO. 1, JANUARY, 1962, PP. 123-135.

BLUM, E.K., TOWARDS A THEORY OF SEMANTICS AND COMPILERS FOR
PROGRAMMING LANGUAGES, ACM SYMPOSIUM ON THEORY OF COMPUTING,
1969, PP. 217-227. UPDATED VERSION IN JOURNAL OF COMPUTER AND
SYSTEM SCIENCES, VOL. 3, NO. 3, AUGUST, 1969, PP. 248-275.

BÖHM, C. AND JACOPINI, G., FLOW DIAGRAMS, TURING MACHINES AND LANGUAGES
WITH ONLY TWO FORMATION RULES, COMMUNICATIONS OF ACM, VOL. 9,
NO. 4, MAY, 1966, PP. 366-371. SEE ALSO COOPER, D.C.

BURSTALL, R.M., SEMANTICS OF ASSIGNMENT, MACHINE INTELLIGENCE 2, DALF,
E. AND MICHIE, D., (EDS.), AMERICAN ELSEVIER, NEW YORK, 1968,
PP. 3-20.

BURSTALL, R.M., PROVING PROPERTIES OF PROGRAMS BY STRUCTURAL INDUCTION,
COMPUTER JOURNAL, VOL. 12, NO. 1, FEBRUARY, 1969, PP. 41-48.

BURSTALL, R.M. AND LANDIN, P.J., PROGRAMS AND THEIR PROOFS: AN ALGEBRAIC
APPROACH, MACHINE INTELLIGENCE 4, MELTZER, B. AND MICHIE, D.,
(EDS.), AMERICAN ELSEVIER, NEW YORK, 1969, PP. 17-43.

CAVINESS, B.F., ON CANONICAL FORMS AND SIMPLIFICATION, PH. D. THESIS,
CARNEGIE-MELLON UNIVERSITY, 1968.

CHARTRES, B.A. AND FLORENTIN, J.J., A UNIVERSAL SYNTAX-DIRECTED
TOP-DOWN ANALYZER, JOURNAL OF ACM, VOL. 15, NO. 3, JULY, 1968,
PP. 447-464.

COOPER, D.C., THE EQUIVALENCE OF CERTAIN COMPUTATIONS, COMPUTER JOURNAL,

VOL. 9, NO. 1, MAY, 1966, PP. 45-52.

COOPER, D.C., MATHEMATICAL PROOFS ABOUT COMPUTER PROGRAMS, MACHINE INTELLIGENCE 1, COLLINS, N.L. AND MICHIE, D., (EDS.), AMERICAN ELSEVIER, NEW YORK, 1967, PP. 17-28.

COOPER, D.C., REDUCTION OF PROGRAMS TO A STANDARD FORM BY GRAPH TRANSFORMATION, THEORY OF GRAPHS, INTERNATIONAL SYMPOSIUM, ROME, JULY, 1966, ROSENSTIEHL, P., (ED.), GORDON AND BREACH, NEW YORK, 1967, PP. 57-68.

COOPER, D.C., BOHM AND JACOPINIS REDUCTION OF FLOW CHARTS, LETTER TO EDITOR, COMMUNICATIONS OF ACM, VOL. 10, NO. 8, AUGUST, 1967, PP. 463,473. SEE ALSO BOHM, C. AND JACOPINI, G.

COOPER, D.C., SOME TRANSFORMATIONS AND STANDARD FORMS OF GRAPHS WITH APPLICATIONS TO COMPUTER PROGRAMS, MACHINE INTELLIGENCE 2, DALE, E. AND MICHIE, D., (EDS.), AMERICAN ELSEVIER, NEW YORK, 1968, PP. 21-32.

COOPER, D.C., PROGRAM SCHEME EQUIVALENCES AND SECOND ORDER LOGIC, MACHINE INTELLIGENCE 4, MELTZER, B. AND MICHIE, D., (EDS.), AMERICAN ELSEVIER, NEW YORK, 1969, PP. 3-15.

COOPER, D.C., PROGRAM SCHEMES, PROGRAMS AND LOGIC, COMPUTATION SERVICES DEPARTMENT MEMORANDUM NO. 6, UNIVERSITY COLLEGE OF SWANSEA, WALES, APRIL, 1969. (PRESENTED AT JOURNEES DETHOES SUR L'ANALYSE SYNTAXIQUE, FOUNTAINBLEAU, FRANCE, MARCH, 1969.)

DE BAKKER, J.W., AXIOMATICS OF SIMPLE ASSIGNMENT STATEMENTS, MATHEMATICAL CENTRE TRACTS 94, MATHEMATISCH CENTRUM, AMSTERDAM, JUNE, 1968.

DE BAKKER, J.W., SEMANTICS OF PROGRAMMING LANGUAGES, ADVANCES IN INFORMATION SYSTEMS SCIENCE, VOL. 2, TOU, J.T., (ED.), PLENUM PUBLISHING CORPORATION, (TO APPEAR).

DIJKSTRA, E.W., SOLUTION OF A PROBLEM IN CONCURRENT PROGRAMMING CONTROL, COMMUNICATIONS OF ACM, VOL. 8, NO. 9, SEPTEMBER, 1965, P. 569. SEE ALSO KNUTH, D.E.

- DIJKSTRA, E.W., CO-OPERATING SEQUENTIAL PROCESSES, PROGRAMMING LANGUAGES, GENUYS, F., (ED.), ACADEMIC PRESS, LONDON AND NEW YORK, 1968, PP. 43-112.
- DIJKSTRA, E.W., TOWARDS CORRECT PROGRAMMING, EWD 241, MATHEMATICS DEPARTMENT, TECHNOLOGICAL UNIVERSITY, EINDHOVEN, THE NETHERLANDS, 1968.
- DIJKSTRA, E.W., A CONSTRUCTIVE APPROACH TO THE PROBLEM OF PROGRAM CORRECTNESS, BIT, VOL. 8, NO. 3, 1968, PP. 174-186.
- DIJKSTRA, E.W., GO TO STATEMENT CONSIDERED HARMFUL, LETTER TO EDITOR, COMMUNICATIONS OF ACM, VOL. 11, NO. 3, MARCH, 1968, PP. 147-148. REPLY, COMMUNICATIONS OF ACM, VOL. 11, NO. 8, AUGUST, 1968, PP. 538,541. SEE ALSO RICE, J.R.
- DIJKSTRA, E.W., THE STRUCTURE OF THE "THE"-MULTIPROGRAMMING SYSTEM, COMMUNICATIONS OF ACM, VOL. 11, NO. 5, MAY, 1968, PP. 341-346.
- DIPAOLA, R.A., A SURVEY OF SOVIET WORK IN THE THEORY OF COMPUTER PROGRAMMING, RAND CORPORATION MEMORANDUM RM-5424-PR, OCTOBER, 1967.
- EARLEY, J.C., GENERATING A RECOGNIZER FOR A BNF GRAMMAR, TECHNICAL REPORT, CARNEGIE-MELLON UNIVERSITY, JUNE, 1965.
- ELGOT, C.C., ABSTRACT ALGORITHMS AND DIAGRAM CLOSURE, PROGRAMMING LANGUAGES, GENUYS, F., (ED.), ACADEMIC PRESS, LONDON AND NEW YORK, 1968, PP. 1-42.
- ENGELER, E., ALGORITHMIC PROPERTIES OF STRUCTURES, MATHEMATICAL SYSTEMS THEORY, VOL. 1, NO. 3, 1967, PP. 183-195.
- ENGELER, E., FORMAL LANGUAGES, AUTOMATA AND STRUCTURES, MARKHAM PUBLISHING, CHICAGO, 1968.
- ENGELER, E., APPROXIMATION BY MACHINES, FORSCHUNGSINSTITUT FUER MATHEMATIK, ETH, ZUERICH, 1969.
- ENGELER, E., ALGORITHMIC APPROXIMATIONS, FORSCHUNGSINSTITUT FUER MATHEMATIK, ETH, ZUERICH, UNDATED.

- ENGELER, E., PROOF THEORY AND THE ACCURACY OF COMPUTATIONS, (TO APPEAR).
- ERSHOV, A.P., OPERATOR ALGORITHMS I, PROBLEMS OF CYBERNETICS, VOL. 3, KISS, G.R., (TRANSLATOR), PERGAMON PRESS, NEW YORK, 1962, PP. 697-763.
- ERSHOV, A.P., OPERATOR ALGORITHMS II (BASIC PROGRAMMING CONSTRUCTIONS), PROBLEMS OF CYBERNETICS, VOL. 8, JOINT PUBLICATIONS RESEARCH SERVICE, DEPARTMENT OF COMMERCE, WASHINGTON, D.C., 1964, PP. 377-407.
- ERSHOV, A.P., OPERATOR ALGORITHMS III (ON THE OPERATOR SCHEMES OF YANOV), PROBLEMY KIBERNETIKA, 20, NAUKA, MOSCOW, 1967, PP. 181-200, (RUSSIAN). ALSO PROBLEMS OF CYBERNETICS, IN PRESS.
- ERSHOV, A.P. AND LYAPUNOV, A.A., ON THE FORMALIZATION OF THE NOTION OF PROGRAM, KIBERNETIKA (KIEV), 5 (10), 1967, PP. 40-57, (RUSSIAN).
- EVANS, A. JR., SYNTAX ANALYSIS BY A PRODUCTION LANGUAGE, PH. D. THESIS, CARNEGIE-MELLON UNIVERSITY, 1965.
- FELS, E.M., KALUZHIN GRAPHS AND YANOV WRITS, LOGIK UND LOGIKKALKUL, KASBAUER, M. AND VON KUTSCHERA, F., (EDS.), VERLAG KARL ALBER, FREIBURG/MUNCHEN, 1962, PP. 159-178.
- FLORENTIN, J.J., LANGUAGE DEFINITION AND COMPUTER VALIDATION, MACHINE INTELLIGENCE 3, MICHIE, D., (ED.), AMERICAN ELSEVIER, 1968, PP. 33-41.
- FLOYD, R.W., ASSIGNING MEANINGS TO PROGRAMS, PROCEEDINGS OF A SYMPOSIUM IN APPLIED MATHEMATICS, VOL. 19-MATHEMATICAL ASPECTS OF COMPUTER SCIENCE, SCHWARTZ, J. T., (ED.), AMERICAN MATHEMATICAL SOCIETY, PROVIDENCE, R.I., 1967, PP. 19-32.
- FLOYD, R.W., THE VERIFYING COMPILER, COMPUTER SCIENCE RESEARCH REVIEW, CARNEGIE-MELLON UNIVERSITY, 1967, PP. 18-19.
- GLEBOV, N.I., O STROENII KLASSA R-KRITERIEV ZKVIVALENTNOSTI, PROBLEMY

KIBERNETIKI, VOL. 9, FIZMATGIZ, MOSKVA, 1962.

GLEBOV, N.I., ON ALGEBRAIC EQUIVALENCE OF SUBSETS OF CATEGORIES,
PROBLEMS OF CYBERNETICS, VOL. 8, JOINT PUBLICATIONS RESEARCH
SERVICE, DEPARTMENT OF COMMERCE, WASHINGTON, D.C., 1964,
PP. 358-376.

GLUSHKOV, V.M., AUTOMATA THEORY AND FORMAL MICROPROGRAM TRANSFORMATIONS,
CYBERNETICS, VOL. 1, NO. 5, SEPTEMBER-OCTOBER, 1965, PP. 1-8.

GOLDSTINE, H.H. AND VON NEUMANN, J., PLANNING AND CODING PROBLEMS FOR
AN ELECTRONIC COMPUTER INSTRUMENT, PART 2, VOL. 1-3, JOHN VON
NEUMANN COLLECTED WORKS, VOL. 5, TAUB, A.H., (GENERAL ED.),
PERGAMON PRESS, NEW YORK, 1963, PP. 80-235. (SEE ESPECIALLY
P. 92 FOR THE USE OF AN ASSERTION BOX.)

GOOD, D.I., PROVING THE CORRECTNESS OF COMPUTER PROGRAMS, UNPUBLISHED
RESEARCH, UNIVERSITY OF WISCONSIN.

GOOD, D.I. AND LONDON, R.L., INTERVAL ARITHMETIC FOR THE BURROUGHS
B5500: FOUR ALGOL PROCEDURES AND PROOFS OF THEIR CORRECTNESS,
COMPUTER SCIENCES TECHNICAL REPORT NO. 26, UNIVERSITY OF
WISCONSIN, JUNE, 1968.

GOOD, D.I. AND LONDON, R.L., RATIONAL INTERVAL ARITHMETIC: DEFINITION
AND PROOF OF CORRECT IMPLEMENTATION, JUNE, 1969.

GREEN, C., APPLICATION OF THEOREM PROVING TO PROBLEM SOLVING,
PROCEEDINGS OF THE INTERNATIONAL JOINT CONFERENCE ON
ARTIFICIAL INTELLIGENCE, WALKER, D.E. AND NORTON, L.M., (EDS.),
1969, PP. 219-239.

HABERMANN, A.N., ON THE HARMONIOUS CO-OPERATION OF ABSTRACT MACHINES,
DOCTORAL THESIS, TECHNOLOGICAL UNIVERSITY EINDHOVEN,
THE NETHERLANDS, 1967.

HABERMANN, A.N., PREVENTION OF SYSTEM DEADLOCKS, COMMUNICATIONS OF ACM,
VOL. 12, NO. 7, JULY, 1969, PP. 373-377, 385.

HOARE, C.A.R., SET MANIPULATION, ALGOL BULLETIN NO. 27, FEBRUARY, 1968,
PP. 29-37.

- HOARE, C.A.R., THE AXIOMATIC BASIS OF COMPUTER PROGRAMMING, DEPARTMENT OF COMPUTER SCIENCE, THE QUEENS UNIVERSITY OF BELFAST, MARCH, 1969.
- HOARE, C.A.R., PROOF OF PROGRAMS: PARTITION AND FIND, DEPARTMENT OF COMPUTER SCIENCE, THE QUEENS UNIVERSITY OF BELFAST, APRIL, 1969.
- HOARE, C.A.R., NOTES ON A THEORY OF TYPES AND DATA STRUCTURING, W.G.2.2 PAPER, JUNE, 1969.
- IANOV, Y.I., ON THE EQUIVALENCE AND TRANSFORMATION OF PROGRAM SCHEMES, COMMUNICATIONS OF ACM, VOL. 1, NO. 10, OCTOBER, 1958, PP. 8-12.
- IANOV, Y.I., ON MATRIX PROGRAM SCHEMES, COMMUNICATIONS OF ACM, VOL. 1, NO. 12, DECEMBER, 1958, PP. 3-6.
- IANOV, Y.I., THE LOGICAL SCHEMES OF ALGORITHMS, PROBLEMS OF CYBERNETICS, VOL. 1, NADLER, M. ET. AL., (TRANSLATORS), PERGAMON PRESS, NEW YORK, 1960, PP. 82-140.
- IANOV, Y.I., ON TRANSFORMATIONS OF PROGRAM FLOW-DIAGRAMS, JOINT PUBLICATIONS RESEARCH SERVICE, 6868, OFFICE OF TECHNICAL SERVICES, MARCH, 1962.
- IANOV, Y.I., ON LOCAL TRANSFORMATION OF ALGORITHM SCHEMES, PROBLEMY KIBERNETIKI, 20, NAUKA, MOSCOW, 1967, (RUSSIAN).
- IGARASHI, S., ON THE LOGICAL SCHEMES OF ALGORITHMS, INFORMATION PROCESSING IN JAPAN, VOL. 3, NO. 2, 1963, PP. 12-18.
- IGARASHI, S., A FORMALIZATION OF THE DESCRIPTIONS OF LANGUAGES AND THE RELATED PROBLEMS IN A GENTZEN-TYPE FORMAL SYSTEM, RESEARCH NOTES, RESEARCH ASSOCIATION OF APPLIED GEOMETRY, SERIES 3, NO. 80, MAY, 1964. (SEE ESPECIALLY PP. 28-29.)
- IGARASHI, S., AN AXIOMATIC APPROACH TO THE EQUIVALENCE PROBLEMS OF ALGORITHMS WITH APPLICATIONS, PH. D. THESIS, UNIVERSITY OF TOKYO, 1964. ALSO REPORT OF THE COMPUTER CENTRE, UNIVERSITY OF TOKYO, VOL. 1, NO. 1, APRIL-SEPTEMBER, 1968, PP. 1-101.

- IGARASHI, S., ON THE EQUIVALENCE OF PROGRAMS REPRESENTED BY ALGOL-LIKE STATEMENTS, REPORT OF THE COMPUTER CENTRE, UNIVERSITY OF TOKYO, VOL. 1, NO. 1, APRIL-SEPTEMBER, 1968, PP. 103-118.
- IGARASHI, S., COMMENTS ON THE FORMAL TREATMENT OF TYPES INCLUDING SETS, ALGOL BULLETIN NO. 29, NOVEMBER, 1968, PP. 12-15.
- IGARASHI, S., EQUIVALENCE-THEORETICAL TREATMENT OF VERIFICATION CONDITIONS, WG2.2 (UNDER TC2 OF IFIP) MEETING, VIENNA, APRIL, 1969.
- ITO, T., SOME FORMAL PROPERTIES OF A CLASS OF NON-DETERMINISTIC PROGRAM SCHEMATA, IEEE CONFERENCE RECORD OF THE NINTH ANNUAL SYMPOSIUM ON SWITCHING AND AUTOMATA THEORY, 1968, PP. 85-98.
- ITO, T., NOTES ON THEORY OF COMPUTATION AND PATTERN RECOGNITION, ARTIFICIAL INTELLIGENCE MEMO NO. 61, STANFORD UNIVERSITY, MAY, 1968.
- ITURRIAGA, R., CONTRIBUTIONS TO MECHANICAL MATHEMATICS, PH. D. THESIS, CARNEGIE-MELLON UNIVERSITY, 1967.
- IVERSON, K.E., A PROGRAMMING LANGUAGE, JOHN WILEY AND SONS, NEW YORK, 1962.
- KALUZHNIK, L.A., ALGORITHMIZATION OF MATHEMATICAL PROBLEMS, PROBLEMS OF CYBERNETICS, VOL. 2, KISS, G.R., (TRANSLATOR), PERGAMON PRESS, NEW YORK, 1961, PP. 371-391.
- KAPLAN, D.M., CORRECTNESS OF A COMPILER FOR ALGOL-LIKE PROGRAMS, ARTIFICIAL INTELLIGENCE MEMO NO. 48, STANFORD UNIVERSITY, JULY, 1967.
- KAPLAN, D.M., SOME COMPLETENESS RESULTS IN THE MATHEMATICAL THEORY OF COMPUTATION, JOURNAL OF ACM, VOL. 15, NO. 1, JANUARY, 1968, PP. 124-134.
- KAPLAN, D.M., A FORMAL THEORY CONCERNING THE EQUIVALENCE OF ALGORITHMS, ARTIFICIAL INTELLIGENCE MEMO NO. 59, STANFORD UNIVERSITY, MAY, 1968.

- KAPLAN, D.M., THE FORMAL THEORETIC ANALYSIS OF STRONG EQUIVALENCE FOR ELEMENTAL PROGRAMS, PH. D. THESIS, STANFORD UNIVERSITY, 1968. ALSO ARTIFICIAL INTELLIGENCE MEMO NO. 60, STANFORD UNIVERSITY, JUNE, 1968.
- KAPLAN, D.M., REGULAR EXPRESSIONS AND THE EQUIVALENCE OF PROGRAMS, ARTIFICIAL INTELLIGENCE MEMO NO. 63, STANFORD UNIVERSITY, JULY, 1968.
- KAPLAN, D.M., RECURSION INDUCTION APPLIED TO GENERALIZED FLOWCHARTS, PROCEEDINGS OF THE 24TH NATIONAL ACM CONFERENCE, 1969, PP. 491-504.
- KARP, R.M., SOME APPLICATIONS OF LOGICAL SYNTAX TO DIGITAL COMPUTER PROGRAMMING, PH. D. THESIS, HARVARD UNIVERSITY, 1959.
- KARP, R.M., A NOTE ON THE APPLICATION OF GRAPH THEORY TO DIGITAL COMPUTER PROGRAMMING, INFORMATION AND CONTROL, VOL. 3, NO. 2, JUNE, 1960, PP. 179-190.
- KARP, R.M. AND MILLER, R.E., PROPERTIES OF A MODEL FOR PARALLEL COMPUTATIONS: DETERMINANCY, TERMINATION, QUEUING, SIAM JOURNAL ON APPLIED MATHEMATICS, VOL. 14, NO. 6, NOVEMBER, 1966, PP. 1390-1411.
- KARP, R.M. AND MILLER, R.E., PARALLEL PROGRAM SCHEMATA: A MATHEMATICAL MODEL FOR PARALLEL COMPUTATION, IEEE CONFERENCE RECORD OF THE EIGHTH ANNUAL SYMPOSIUM ON SWITCHING THEORY AND AUTOMATA THEORY, 1967, PP. 55-61.
- KARP, R.M. AND MILLER R.E., PARALLEL PROGRAM SCHEMATA, JOURNAL OF COMPUTER AND SYSTEM SCIENCES, VOL. 3, NO. 2, MAY, 1969, PP. 147-195.
- KING, J.C., A PROGRAM VERIFIER, UNPUBLISHED RESEARCH, CARNEGIE-MELLON UNIVERSITY.
- KNUTH, D.E., ADDITIONAL COMMENTS ON A PROBLEM IN CONCURRENT PROGRAMMING CONTROL, LETTER TO EDITOR, COMMUNICATIONS OF ACM, VOL. 9, NO. 5, MAY, 1966, PP. 321-322. SEE ALSO DIJKSTRA, E.W.

- KNUTH, D.E., THE ART OF COMPUTER PROGRAMMING, VOL. 1-FUNDAMENTAL ALGORITHMS, ADDISON-WESLEY, READING, MASS., 1968, PP. 14-20, 318-319. VOL. 2-SEMINUMERICAL ALGORITHMS, 1969, PP. 245, 246, 508, 510.
- KNUTH, D.E., SEMANTICS OF CONTEXT-FREE LANGUAGES, MATHEMATICAL SYSTEMS THEORY, VOL. 2, NO. 2, JUNE, 1968, PP. 127-145.
- KRINITSKIY, N.A., RAVNOSILNYE PREEBRAZOVANIYA LOGICHESKIKH SKHEM, AVTOREFERAT DISSERTATSII, MGU, MOSKVA, 1959.
- KUNZE, J., SELEKTIVE GRAPHSCHEMATA, ZEITSCHRIFT FUR MATHEMATISCHE LOGIK UND GRUNDLAGEN DER MATHEMATIK, VOL. 13, NO. 2, 1967, PP. 101-122.
- LASKI, J.G., SETS AND OTHER TYPES, ALGOL BULLETIN NO. 27, FEBRUARY, 1968, PP. 41-48.
- LEVY, S. AND PAULL, M.C., AN ALGEBRA WITH APPLICATIONS TO SORTING ALGORITHMS, PROCEEDINGS OF THE THIRD ANNUAL PRINCETON CONFERENCE ON INFORMATION SCIENCES AND SYSTEMS, 1969, PP. 286-291. ALSO RCA TECHNICAL REPORT PTR-2176, 1969.
- LONDON, R.L., A COMPUTER PROGRAM FOR DISCOVERING AND PROVING SEQUENTIAL RECOGNITION RULES FOR WELL-FORMED FORMULAS DEFINED BY A BACKUS NORMAL FORM GRAMMAR, PH. D. THESIS, CARNEGIE-MELLON UNIVERSITY, 1964.
- LONDON, R.L., A COMPUTER PROGRAM FOR DISCOVERING AND PROVING RECOGNITION RULES FOR BACKUS NORMAL FORM GRAMMARS, PROCEEDINGS OF THE 19TH NATIONAL ACM CONFERENCE, 1964, PP. A1.3-1 TO A1.3-7.
- LONDON, R.L., CORRECTNESS OF THE ALGOL PROCEDURE ASKFORHAND, COMPUTER SCIENCES TECHNICAL REPORT NO. 50, UNIVERSITY OF WISCONSIN, NOVEMBER, 1968.
- LONDON, R.L., COMPUTER PROGRAMS CAN BE PROVED CORRECT, PROCEEDINGS OF THE FOURTH SYSTEMS SYMPOSIUM--FORMAL SYSTEMS AND NON-NUMERICAL PROBLEM SOLVING BY COMPUTERS, HELD AT CASE WESTERN RESERVE UNIVERSITY, NOVEMBER, 1968, (TO APPEAR).

- LONDON, R.L., PROOF OF ALGORITHMS: A NEW KIND OF CERTIFICATION
(CERTIFICATION OF ALGORITHM 245 TREESORT 3), FEBRUARY, 1969.
- LONDON, R.L., PROVING PROGRAMS CORRECT: SOME TECHNIQUES AND EXAMPLES,
JUNE, 1969.
- LONDON, R.L. AND HALTON, J.H., PROOFS OF ALGORITHMS FOR ASYMPTOTIC
SERIES, COMPUTER SCIENCES TECHNICAL REPORT NO. 54A,
UNIVERSITY OF WISCONSIN, MAY, 1969.
- LONDON, R.L. AND WASSERMAN, A.I., THE ANATOMY OF AN ALGOL PROCEDURE,
COMPUTER SCIENCES TECHNICAL REPORT NO. 5, UNIVERSITY OF
WISCONSIN, JULY, 1967.
- LUCAS, P., TWO CONSTRUCTIVE REALIZATIONS OF THE BLOCK CONCEPT AND THEIR
EQUIVALENCE, TECHNICAL REPORT 25.085, IBM LABORATORY, VIENNA,
JANUARY, 1968.
- LUCKHAM, D.C., INVESTIGATION OF THE THEORY OF ALGORITHMS WITH EMPHASIS
ON PROGRAM SIMPLIFICATION, BOLT BERANEK AND NEWMAN INC.,
REPORT NO. 1225, 1965.
- LUCKHAM, D.C. AND PARK, D.M.R., THE UNDECIDABILITY OF THE EQUIVALENCE
PROBLEM FOR PROGRAM SCHEMATA, BOLT BERANEK AND NEWMAN INC.,
REPORT NO. 1141, 1964.
- LUCKHAM, D.C., PARK, D.M.R. AND PATERSON, M.S., ON FORMALIZED COMPUTER
PROGRAMS, PROGRAMMING RESEARCH GROUP, OXFORD UNIVERSITY,
AUGUST, 1967.
- LYAPUNOV, A.A., LOGICAL SCHEMES OF PROGRAMS, PROBLEMS OF CYBERNETICS,
VOL. 1, NADLER, M. ET. AL., (TRANSLATORS), PERGAMON PRESS,
NEW YORK, 1960, PP. 48-81.
- MANNA, Z., TERMINATION OF ALGORITHMS, PH. D. THESIS, CARNEGIE-MELLON
UNIVERSITY, 1968.
- MANNA, Z., THE CORRECTNESS PROBLEM OF COMPUTER PROGRAMS, COMPUTER
SCIENCE RESEARCH REVIEW, CARNEGIE-MELLON UNIVERSITY, 1968,
PP. 34-36.

- MANNA, Z., FORMALIZATION OF PROPERTIES OF PROGRAM, ARTIFICIAL INTELLIGENCE MEMO NO. 64, STANFORD UNIVERSITY, JULY, 1968.
- MANNA, Z., PROPERTIES OF PROGRAMS AND THE FIRST-ORDER PREDICATE CALCULUS, JOURNAL OF ACM, VOL. 16, NO. 2, APRIL, 1969, PP. 244-255.
- MANNA, Z., THE CORRECTNESS OF PROGRAMS, JOURNAL OF COMPUTER AND SYSTEM SCIENCES, VOL. 3, NO. 2, MAY, 1969, PP. 119-127.
- MANNA, Z. AND PNUJELI, A., THE VALIDITY PROBLEM OF THE η -FUNCTION, ARTIFICIAL INTELLIGENCE MEMO NO. 68, STANFORD UNIVERSITY, AUGUST, 1968.
- MANNA, Z. AND PNUJELI, A., FORMALIZATION OF PROPERTIES OF RECURSIVELY DEFINED FUNCTIONS, ACM SYMPOSIUM ON THEORY OF COMPUTING, 1969, PP. 201-210.
- MARKOV, A.A., THEORY OF ALGORITHMS, SCHORR-KON, J.J., (TRANSLATOR), U.S. DEPARTMENT OF COMMERCE, OFFICE OF TECHNICAL SERVICES, NO. DTS 60-51085, 1961.
- MARTYNYUK, V.V., OB ANALIZE GRAFA PEREKHODOV DLYA OPERATORNOY SKHEMY, ZHURNAL VYCHISLITELNOY MATEMATIKI I MATEMATICHESKOY FIZIKI, VOL. 5, NO. 2, MOSKVA, 1965.
- MARTYNYUK, V.V., O PROVERKE ZHVIVALENTNOSTI OPERATORNYKH SKHEM, TEZISY KRATKIKH NAUCHYKH SOOBSHCHENIY MEZH DUNARODNOMU KONGRESSU MATEMATIKOV 1966 G. (SEKTSIYA 14), MOSKVA, 1966.
- MAURER, W.D., A THEORY OF COMPUTER INSTRUCTIONS, JOURNAL OF ACM, VOL. 13, NO. 2, APRIL, 1966, PP. 226-235.
- MCCARTHY, J., RECURSIVE FUNCTIONS OF SYMBOLIC EXPRESSIONS AND THEIR COMPUTATIONS BY MACHINE, PART 1, COMMUNICATIONS OF ACM, VOL. 3, NO. 4, APRIL, 1960, PP. 184-195.
- MCCARTHY, J., COMPUTER PROGRAMS FOR CHECKING MATHEMATICAL PROOFS, PROCEEDINGS OF SYMPOSIUM IN PURE MATHEMATICS, VOL. 5-RECURSIVE FUNCTION THEORY, DEKKER, J.C.F., (ED.), AMERICAN MATHEMATICAL

SOCIETY, PROVIDENCE, R.I., 1962, PP. 219-227.

MCCARTHY, J., TOWARDS A MATHEMATICAL SCIENCE OF COMPUTATION, INFORMATION PROCESSING 1962, PROCEEDINGS OF IFIP CONGRESS 62, POPPLEWELL, C.M., (ED.), NORTH-HOLLAND, AMSTERDAM, 1963, PP. 21-28.

MCCARTHY, J., A BASIS FOR A MATHEMATICAL THEORY OF COMPUTATION, COMPUTER PROGRAMMING AND FORMAL SYSTEMS, BRAFFORT, P. AND HIRSCHBERG, D., (EDS.), NORTH-HOLLAND, AMSTERDAM, 1963, PP. 33-70. ALSO PROCEEDINGS OF THE WESTERN JOINT COMPUTER CONFERENCE, 1961, PP. 225-238.

MCCARTHY, J., PROBLEMS IN THE THEORY OF COMPUTATION, PROCEEDINGS OF IFIP CONGRESS 65, KALENICH, W., (ED.), SPARTAN BOOKS INC., WASHINGTON, D.C., 1965, PP. 219-222.

MCCARTHY, J., A FORMAL DESCRIPTION OF A SUBSET OF ALGOL, FORMAL LANGUAGE DESCRIPTION LANGUAGES FOR COMPUTER PROGRAMMING, STEEL, T.R. JR., (ED.), NORTH-HOLLAND, AMSTERDAM, 1966, PP. 1-12.

MCCARTHY, J., (ED.), PAPERS IN THEORY OF COMPUTATION, (REPRINTED PAPERS), STANFORD UNIVERSITY, MARCH, 1966.

MCCARTHY, J. AND HAYES P.J., SOME PHILOSOPHICAL PROBLEMS FROM THE STANDPOINT OF ARTIFICIAL INTELLIGENCE, MACHINE INTELLIGENCE 4, MELTZER, B. AND MICHIE, D., (EDS.), AMERICAN ELSEVIER, NEW YORK, 1969, PP. 463-502. (SEE ESPECIALLY PP. 481-483.)

MCCARTHY, J. AND PAINTER J.A., CORRECTNESS OF A COMPILER FOR ARITHMETIC EXPRESSIONS, PROCEEDINGS OF A SYMPOSIUM IN APPLIED MATHEMATICS, VOL. 19-MATHEMATICAL ASPECTS OF COMPUTER SCIENCE, SCHWARTZ, J.T., (ED.), AMERICAN MATHEMATICAL SOCIETY, PROVIDENCE, R.I., 1967, PP. 33-41.

MILNER, R., A PARTIAL DECISION PROCEDURE FOR $P \neq Q$, WHERE P, Q ARE PROGRAM SCHEMES WITH NON-INTERSECTING LOOPS, COMPUTATION SERVICES DEPARTMENT MEMORANDUM NO. 1, UNIVERSITY COLLEGE OF SWANSEA, WALES, OCTOBER, 1968.

- MILNER, R., SOME EQUIVALENCE RELATIONS ON PROGRAM SCHEMES, COMPUTATION SERVICES DEPARTMENT MEMORANDUM NO. 5, UNIVERSITY COLLEGE OF SWANSEA, WALES, MARCH, 1969.
- MUNTEANU, E., METOD ANALIZA GRAF-SKHEMNYKH ALGORIFMOV, MATHEMATICA, VOL. 5(28), 2, 1965.
- MUNTEANU, E., ANALYSE LOGIQUE DES ALGORITHMES(1), MATHEMATICA, VOL. 9(32), 1, 1967, PP. 111-128.
- NAUR, P., PROOF OF ALGORITHMS BY GENERAL SNAPSHOTS, BIT, VOL. 6, NO. 4, 1966, PP. 310-316.
- NIEVERGELT, J. AND IRLAND, M.I., NUCLEOL AS A FORMAL SYSTEM, SIGPLAN SYMPOSIUM ON PROGRAMMING LANGUAGE DEFINITION, 1969.
- NIKITIN, A.S., A CLASS OF EQUIVALENT TRANSFORMATIONS OF OPERATOR SCHEMES I, CYBERNETICS, VOL. 2, NO. 5, SEPTEMBER-OCTOBER, 1966, PP. 51-57.
- DETTINGER, A.G., AUTOMATIC SYNTAX ANALYSIS AND THE PUSHDOWN STORE, PROCEEDINGS OF A SYMPOSIUM IN APPLIED MATHEMATICS, VOL. 12- STRUCTURE OF LANGUAGE AND ITS MATHEMATICAL ASPECTS, JAKOBSON, R., (ED.), AMERICAN MATHEMATICAL SOCIETY, PROVIDENCE, R.I., 1961, PP. 104-129.
- ORGASS, R.J., A MATHEMATICAL THEORY OF COMPUTING MACHINE STRUCTURE AND PROGRAMMING, PH. D. THESIS, YALE UNIVERSITY, 1967. ALSO IBM RESEARCH PAPER RC-1863, JULY, 1967.
- ORGASS, R.J., PROBLEMS IN THE THEORY OF PROGRAMMING, IBM RESEARCH PAPER RC-2236, MARCH, 1968.
- ORGASS, R.J., SOME RESULTS CONCERNING PROOFS OF STATEMENTS ABOUT PROGRAMS, IBM RESEARCH PAPER RC-2324, JANUARY, 1969.
- ORGASS, R.J. AND FITCH F.B., A THEORY OF PROGRAMMING LANGUAGES, IBM RESEARCH PAPER RC-1979, 1967.
- ORGASS, R.J. AND FITCH F.B., A THEORY OF COMPUTING MACHINES, STUDIUM GENERALE, VOL. 22, 1969, PP. 83-104 AND 113-136.

- PAINTEK, J.A., SEMANTIC CORRECTNESS OF A COMPILER FOR AN ALGOL-LIKE LANGUAGE, ARTIFICIAL INTELLIGENCE MEMO NO. 44, STANFORD UNIVERSITY, MARCH, 1967. ALSO PH. D. THESIS, STANFORD UNIVERSITY, 1967.
- PATERSON, M.S., EQUIVALENCE PROBLEMS IN A MODEL OF COMPUTATION, PH. D. THESIS, UNIVERSITY OF CAMBRIDGE, AUGUST, 1967.
- PATERSON, M.S., PROGRAM SCHEMATA, MACHINE INTELLIGENCE 3, MICHIE, D., (ED.), AMERICAN ELSEVIER, NEW YORK, 1968, PP. 18-31.
- PERLIS, A.J., UNPUBLISHED NOTES ON PROOFS OF THREE NUMERIC ALGORITHMS, UNIVERSITY OF MICHIGAN SUMMER SESSION, JUNE, 1963.
- PUDLOVCHENKO, R.T., PRIMER ISPOLZOVANIYA PEOBRAZOVANIY LOGICHESKIKH SKHEM PROGRAMM, PROBLEMY KIBERNETIKI, VOL. 11, FIZMATGIZ, MOSKVA, 1963.
- PROSSER, R.T., APPLICATIONS OF BOOLEAN MATRICES TO THE ANALYSIS OF FLOW DIAGRAMS, PROCEEDINGS OF THE EASTERN JOINT COMPUTER CONFERENCE, 1959, PP. 133-138.
- RECHARD, O.W., AND STARK, R.H., EQUIVALENCE OF TWO ALGORITHMS FOR COOPERS GENERALISED FACTORIAL FUNCTION, COMPUTER JOURNAL, VOL. 12, NO. 1, FEBRUARY, 1969, PP. 33-37.
- RENNIE, M.K., THE THEORY OF PROCEDURES I, SIMPLE CONDITIONALS, NOTRE DAME JOURNAL OF FORMAL LOGIC, VOL. 10, NO. 1, JANUARY, 1969, PP. 97-112. ABSTRACT ONLY IN JOURNAL OF SYMBOLIC LOGIC, VOL. 32, 1967, P. 577.
- RICE, J.R., THE GO TO STATEMENT RECONSIDERED, LETTER TO EDITOR, COMMUNICATIONS OF ACM, VOL. 11, NO. 8, AUGUST, 1968, P. 538. SEE ALSO DIJKSTRA, E.W.
- ROSSER, J.B., SCHÖNFELD, L. AND YOHE, J.M., RIGOROUS COMPUTATION AND THE ZEROS OF THE RIEMANN ZETA-FUNCTION, INVITED PAPER, PROCEEDINGS IFIP CONGRESS 68, 1968, PP. 13-18.
- RUTLEDGE, J.D., ON LAMOS PROGRAM SCHEMATA, JOURNAL OF ACM, VOL. 11,

NO. 1, JANUARY, 1964, PP. 1-9.

RUTLEDGE, J.D., THE PROBLEM OF CORRECT PROGRAMMING, UNDATED.

SANDERSON, J.G., A CONTRIBUTION TO THE THEORY OF PROGRAMMING LANGUAGES,
PH. D. THESIS, UNIVERSITY OF ADELAIDE, 1966.

SANDERSON, J.G., THE THEORY OF PROGRAMMING LANGUAGES--A SURVEY,
PROCEEDINGS OF THE THIRD AUSTRALIAN COMPUTER CONFERENCE,
1966, AUSTRALIAN TRADE PUBLICATIONS PTY. LTD., CHIPPENDALE,
N.S.W., AUSTRALIA, 1967, PP. 321-324.

SANDERSON, J.G., MATHEMATICAL MODELS OF PROGRAMMING LANGUAGES, JOURNAL
OF ACM, (TO APPEAR).

SAUER, G., REMARK ON ALGORITHM 268, COMMUNICATIONS OF ACM, VOL. 12, NO.
7, JULY, 1969, P. 407.

SHIREY, R.W., IMPLEMENTATION AND ANALYSIS OF EFFICIENT GRAPH PLANARITY
TESTING ALGORITHMS, PH. D. THESIS, UNIVERSITY OF WISCONSIN,
1969. ALSO COMPUTER SCIENCES CORPORATION REPORT, 1969.

SLUTZ, D.R., THE FLOW GRAPH SCHEMATA MODEL OF PARALLEL COMPUTATION,
PH. D. THESIS, MASSACHUSETTS INSTITUTE OF TECHNOLOGY, 1968.

SMIRNOV, YU. I., O PREEBRAZOVANII OPERATORNOY SKHEMY, ZHURNAL
VYCHISLITELNOY MATEMATIKI I MATEMATICHESKOY FIZIKI, VOL. 3,
NO. 3, MOSKVA, 1963.

STARK, R.H., ON MEANS TO RECORD ALGORITHMS TO FACILITATE GENERATION OF
ERROR-FREE PROGRAMS, COMPUTING CENTER REPORT 68-1, WASHINGTON
STATE UNIVERSITY, 1968.

THIELE, H., WISSENSCHAFTSTHEORETISCHE UNTERSUCHUNGEN IN ALGORITHMISCHEN
SPRACHEN I, VEB DEUTSCHER VERLAG DER WISSENSCHAFTEN, BERLIN,
1966.

THORELLI, L.E., AN ALGORITHM FOR COMPUTING ALL PATHS IN A GRAPH, BIT,
VOL. 6, NO. 4, 1966, PP. 347-349.

TOBEY, R.G., RATIONAL FUNCTION INTEGRATION, PH. D. THESIS, HARVARD

UNIVERSITY, 1967.

TUNOYAN, R.N., LOGICHESKIE SKHFMY ALGORITMOV I IKH ZKVIVALENTNYE
PREOBRAZOVANIYA, PROBLEMY KIBERNETIKI, VOL. 14, IZD-VN NAUKA,
MOSKVA, 1964.

VAN WIJNGAARDEN, A., NUMERICAL ANALYSIS AS AN INDEPENDENT SCIENCE, BIT,
VOL. 6, NO. 1, 1966, PP. 66-81.

VAN WIJNGAARDEN, A. (ED.), MAILLOUX, B.J., PECK, J.E.L. AND KOSTER,
C.H.A., FINAL DRAFT REPORT ON THE ALGORITHMIC LANGUAGE ALGOL
68, MATHEMATISCH CENTRUM REPORT MR 100, AMSTERDAM, 1968.

WAGNER, R.A., SOME TECHNIQUES FOR ALGORITHM OPTIMIZATION WITH
APPLICATION TO MATRIX ARITHMETIC EXPRESSIONS, PH. D. THESIS,
CARNEGIE-MELLON UNIVERSITY, 1968.

WALDINGER, R.J. AND LEE, R.C.T., PROW: A STEP TOWARD AUTOMATIC PROGRAM
WRITING, PROCEEDINGS OF THE INTERNATIONAL JOINT CONFERENCE
ON ARTIFICIAL INTELLIGENCE, WALKER, D.E. AND NORTON, L.M.,
(EDS.), 1969, PP. 241-252.

WALTERS, D.A., A REPRESENTATION SYSTEM FOR PARSING PROCEDURES, RCA
LABORATORIES SCIENTIFIC REPORT NO. 1, 1968, ALSO PH. D. THESIS,
UNIVERSITY OF PENNSYLVANIA, 1968.

WIRTH, N., ON CERTAIN BASIC CONCEPTS OF PROGRAMMING LANGUAGES,
COMPUTER SCIENCE TECHNICAL REPORT NO. CS65, STANFORD
UNIVERSITY, MAY, 1967.

WOOD, D., A PROOF OF HAMBLIN'S ALGORITHM FOR TRANSLATION OF ARITHMETIC
EXPRESSIONS FROM INFIX TO POSTFIX FORM, BIT, VOL. 9, NO. 1,
1969, PP. 59-68.

WOOD, D., THE THEORY OF LEFT FACTORED LANGUAGES, COMPUTER JOURNAL, VOL.
12, 1969, (TO APPEAR).

YANOV, YU.I. SEE IANOV, Y.I.

YUHE, J.M., COMPUTER PROGRAMMING FOR ACCURACY, MATHEMATICS
RESEARCH CENTER TECHNICAL SUMMARY REPORT NO. 866,

UNIVERSITY OF WISCONSIN, APRIL, 1968.

ZAMA, N., ON MODELS OF ALGORITHMS AND FLOWCHARTS, COMMENTARII
MATHEMATICI UNIVERSITATIS SANCTI PAULI, VOL. 14, NO. 2, 1966,
PP. 123-134.

ZAMA, N., ON A GENERALIZATION OF ALGORITHMS AND ONE OF ITS APPLICATIONS
(I), COMMENTARII MATHEMATICI UNIVERSITATIS SANCTI PAULI, VOL.
15, NO. 2, 1967, PP. 109-116.

ZAMA, N., ON SOME ALGEBRAIC FORMULATION OF ALGORITHMS, COMMENTARII
MATHEMATICI UNIVERSITATIS SANCTI PAULI, VOL. 17, NO. 1, 1968,
PP. 53-62.

ZASLAVSKIĬ, I.D., GRAPH-SCHEMES WITH MEMORY, MATEMATYCHESKOGO INSTUTA
IMENI V. A. STEKLOVA, LXXII, PP. 99-192, (RUSSIAN).

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