

Meromorphic Functions And Linear Algebra

RIGHT HERE, WE HAVE COUNTLESS EBOOK **MEROMORPHIC FUNCTIONS AND LINEAR ALGEBRA** AND COLLECTIONS TO CHECK OUT. WE ADDITIONALLY COME UP WITH THE MONEY FOR VARIANT TYPES AND AFTER THAT TYPE OF THE BOOKS TO BROWSE. THE CONVENTIONAL BOOK, FICTION, HISTORY, NOVEL, SCIENTIFIC RESEARCH, AS COMPETENTLY AS VARIOUS SUPPLEMENTARY SORTS OF BOOKS ARE READILY MANAGEABLE HERE.

AS THIS MEROMORPHIC FUNCTIONS AND LINEAR ALGEBRA, IT ENDS GOING ON INSTINCTIVE ONE OF THE FAVORED BOOKS MEROMORPHIC FUNCTIONS AND LINEAR ALGEBRA COLLECTIONS THAT WE HAVE. THIS IS WHY YOU REMAIN IN THE BEST WEBSITE TO LOOK THE UNBELIEVABLE BOOK TO HAVE.

METHODS OF ALGEBRAIC GEOMETRY IN CONTROL THEORY:
PART I PETER FALB 1990-07-01 CONTROL THEORY REPRESENTS AN ATTEMPT TO CODIFY, IN MATHEMATICAL TERMS, THE PRINCIPLES AND TECHNIQUES USED IN THE ANALYSIS AND DESIGN OF CONTROL SYSTEMS. ALGEBRAIC GEOMETRY MAY, IN AN ELEMENTARY WAY, BE VIEWED AS THE STUDY OF THE STRUCTURE AND PROPERTIES OF THE SOLUTIONS OF SYSTEMS OF ALGEBRAIC EQUATIONS. THE AIM OF THESE NOTES IS TO PROVIDE ACCESS TO THE METHODS OF ALGEBRAIC GEOMETRY FOR ENGINEERS AND APPLIED SCIENTISTS

THROUGH THE MOTIVATED CONTEXT OF CONTROL THEORY. I BEGAN THE DEVELOPMENT OF THESE NOTES OVER FIFTEEN YEARS AGO WITH A SERIES OF LECTURES GIVEN TO THE CONTROL GROUP AT THE LUND INSTITUTE OF TECHNOLOGY IN SWEDEN. OVER THE FOLLOWING YEARS, I PRESENTED THE MATERIAL IN COURSES AT BROWN SEVERAL TIMES AND MUST EXPRESS MY APPRECIATION FOR THE FEEDBACK (SIC!) RECEIVED FROM THE STUDENTS. I HAVE ATTEMPTED THROUGHOUT TO STRIVE FOR CLARITY, OFTEN MAKING USE OF CONSTRUCTIVE METHODS AND GIVING SEVERAL PROOFS OF A PARTICULAR RESULT. SINCE ALGEBRAIC GEOMETRY DRAWS ON SO MANY

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BRANCHES OF MATHEMATICS AND CAN BE DAUNTINGLY ABSTRACT, IT IS NOT EASY TO CONVEY ITS BEAUTY AND UTILITY TO THOSE INTERESTED IN APPLICATIONS. I HOPE AT LEAST TO HAVE STIRRED THE READER TO SEEK A DEEPER UNDERSTANDING OF THIS BEAUTY AND UTILITY IN CONTROL THEORY. THE FIRST VOLUME DEALS WITH THE SIMPLEST CONTROL SYSTEMS (I. E. SINGLE INPUT, SINGLE OUTPUT LINEAR TIME-INVARIANT SYSTEMS) AND WITH THE SIMPLEST ALGEBRAIC GEOMETRY (I. E. AFFINE ALGEBRAIC GEOMETRY).

COMPUTATIONAL APPROACH TO RIEMANN SURFACES
ALEXANDER I. BOBENKO TU BERLIN 2011-02-03 THIS VOLUME OFFERS A WELL-STRUCTURED OVERVIEW OF EXISTENT COMPUTATIONAL APPROACHES TO RIEMANN SURFACES AND THOSE CURRENTLY IN DEVELOPMENT. THE AUTHORS OF THE CONTRIBUTIONS REPRESENT THE GROUPS PROVIDING PUBLICALLY AVAILABLE NUMERICAL CODES IN THIS FIELD. THUS THIS VOLUME ILLUSTRATES WHICH SOFTWARE TOOLS ARE AVAILABLE AND HOW THEY CAN BE USED IN PRACTICE. IN ADDITION EXAMPLES FOR SOLUTIONS TO PARTIAL DIFFERENTIAL EQUATIONS AND IN SURFACE THEORY ARE PRESENTED. THE INTENDED AUDIENCE OF THIS BOOK IS TWOFOLD. IT CAN BE USED AS A TEXTBOOK FOR A GRADUATE COURSE IN NUMERICS OF RIEMANN SURFACES, IN WHICH CASE THE STANDARD UNDERGRADUATE BACKGROUND, I.E., CALCULUS AND LINEAR ALGEBRA, IS REQUIRED. IN PARTICULAR, NO KNOWLEDGE OF THE THEORY OF RIEMANN SURFACES IS

EXPECTED; THE NECESSARY BACKGROUND IN THIS THEORY IS CONTAINED IN THE INTRODUCTION CHAPTER. AT THE SAME TIME, THIS BOOK IS ALSO INTENDED FOR SPECIALISTS IN GEOMETRY AND MATHEMATICAL PHYSICS APPLYING THE THEORY OF RIEMANN SURFACES IN THEIR RESEARCH. IT IS THE FIRST BOOK ON NUMERICS OF RIEMANN SURFACES THAT REFLECTS THE PROGRESS MADE IN THIS FIELD DURING THE LAST DECADE, AND IT CONTAINS ORIGINAL RESULTS. THERE ARE A GROWING NUMBER OF APPLICATIONS THAT INVOLVE THE EVALUATION OF CONCRETE CHARACTERISTICS OF MODELS ANALYTICALLY DESCRIBED IN TERMS OF RIEMANN SURFACES. MANY PROBLEM SETTINGS AND COMPUTATIONS IN THIS VOLUME ARE MOTIVATED BY SUCH CONCRETE APPLICATIONS IN GEOMETRY AND MATHEMATICAL PHYSICS.

PROCEEDINGS OF THE SECOND ISAAC CONGRESS HEINRICH G.W. BEGEHR 2013-12-01 THIS BOOK IS THE PROCEEDINGS OF THE SECOND ISAAC CONGRESS. ISAAC IS THE ACRONYM OF THE INTERNATIONAL SOCIETY FOR ANALYSIS, ITS APPLICATIONS AND COMPUTATION. THE PRESIDENT OF ISAAC IS PROFESSOR ROBERT P. GILBERT, THE SECOND NAMED EDITOR OF THIS BOOK, E-MAIL: GILBERT@MATH.UDEL.EDU. THE CONGRESS IS WORLD-WIDE VALUED SO HIGHLY THAT AN APPLICATION FOR A GRANT HAS BEEN SELECTED AND THIS PROJECT HAS BEEN EXECUTED WITH GRANT NO. 11-56 FROM *THE COMMEMORATIVE ASSOCIATION FOR THE JAPAN WORLD EXPOSITION (1970).

THE FINANCE OF THE PUBLICATION OF THIS BOOK IS EXCLUSIVELY THE SAID GRANT No. 11-56 FROM *. THUS, A PAIR OF EACH ONE COPY OF TWO VOLUMES OF THIS BOOK WILL BE SENT TO ALL CONTRIBUTORS, WHO REGISTERED AT THE SECOND ISAAC CONGRESS IN FUKUOKA, FREE OF CHARGE BY THE KLUWER ACADEMIC PUBLISHERS. ANALYSIS IS UNDERSTOOD HERE IN THE BROAD SENSE OF THE WORD, INCLUDING DIFFERENTIAL EQUATIONS, INTEGRAL EQUATIONS, FUNCTIONAL ANALYSIS, AND FUNCTION THEORY. IT IS THE PURPOSE OF ISAAC TO PROMOTE ANALYSIS, ITS APPLICATIONS, AND ITS INTERACTION WITH COMPUTATION. WITH THIS OBJECTIVE, ISAAC ORGANIZES INTERNATIONAL CONGRESSES FOR THE PRESENTATION AND DISCUSSION OF RESEARCH ON ANALYSIS. ISAAC WELCOMES NEW MEMBERS AND THOSE INTERESTED IN JOINING ISAAC ARE ENCOURAGED TO LOOK AT THE WEB SITE [HTTP://WWW.MATH.UDEL.EDU/GILBERT/ISAAC/INDEX.HTML](http://www.math.udel.edu/gilbert/isaac/index.html) VI AND [HTTP://WWW.MATH.FU-BERLIN.DE/RD/AG/ISAAC/NEWTON/INDEX.HTML](http://www.math.fu-berlin.de/rd/ag/isaac/newton/index.html).

METHODS OF ALGEBRAIC GEOMETRY IN CONTROL THEORY: PART I PETER FALB 2018-08-25 "AN INTRODUCTION TO THE IDEAS OF ALGEBRAIC GEOMETRY IN THE MOTIVATED CONTEXT OF SYSTEM THEORY." THUS THE AUTHOR DESCRIBES HIS TEXTBOOK THAT HAS BEEN SPECIFICALLY WRITTEN TO SERVE THE NEEDS OF STUDENTS OF SYSTEMS AND CONTROL. WITHOUT SACRIFICING MATHEMATICAL CARE, THE AUTHOR

MAKES THE BASIC IDEAS OF ALGEBRAIC GEOMETRY ACCESSIBLE TO ENGINEERS AND APPLIED SCIENTISTS. THE EMPHASIS IS ON CONSTRUCTIVE METHODS AND CLARITY RATHER THAN ABSTRACTION. THE STUDENT WILL FIND HERE A CLEAR PRESENTATION WITH AN APPLIED FLAVOR, OF THE CORE IDEAS IN THE ALGEBRA-GEOMETRIC TREATMENT OF SCALAR LINEAR SYSTEM THEORY. THE AUTHOR INTRODUCES THE FOUR REPRESENTATIONS OF A SCALAR LINEAR SYSTEM AND ESTABLISHES THE MAJOR RESULTS OF A SIMILAR THEORY FOR MULTIVARIABLE SYSTEMS APPEARING IN A SUCCEEDING VOLUME (PART II: MULTIVARIABLE LINEAR SYSTEMS AND PROJECTIVE ALGEBRAIC GEOMETRY). PREREQUISITES ARE THE BASICS OF LINEAR ALGEBRA, SOME SIMPLE NOTIONS FROM TOPOLOGY AND THE ELEMENTARY PROPERTIES OF GROUPS, RINGS, AND FIELDS, AND A BASIC COURSE IN LINEAR SYSTEMS. EXERCISES ARE AN INTEGRAL PART OF THE TREATMENT AND ARE USED WHERE RELEVANT IN THE MAIN BODY OF THE TEXT. THE PRESENT, SOFTCOVER REPRINT IS DESIGNED TO MAKE THIS CLASSIC TEXTBOOK AVAILABLE TO A WIDER AUDIENCE. "THIS BOOK IS A CONCISE DEVELOPMENT OF AFFINE ALGEBRAIC GEOMETRY TOGETHER WITH VERY EXPLICIT LINKS TO THE APPLICATIONS...[AND] SHOULD ADDRESS A WIDE COMMUNITY OF READERS, AMONG PURE AND APPLIED MATHEMATICIANS." —MONATSHEFTE FÜR MATHEMATIK

DIOPHANTINE APPROXIMATION ON LINEAR ALGEBRAIC GROUPS MICHEL WALDSCHMIDT 2013-03-14 THE THEORY OF

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TRANSCENDENTAL NUMBERS IS CLOSELY RELATED TO THE STUDY OF DIOPHANTINE APPROXIMATION. THIS BOOK DEALS WITH VALUES OF THE USUAL EXPONENTIAL FUNCTION e^z : A CENTRAL OPEN PROBLEM IS THE CONJECTURE ON ALGEBRAIC INDEPENDENCE OF LOGARITHMS OF ALGEBRAIC NUMBERS. TWO CHAPTERS PROVIDE COMPLETE AND SIMPLIFIED PROOFS OF ZERO ESTIMATES (DUE TO PHILIPPON) ON LINEAR ALGEBRAIC GROUPS.

SYSTEM THEORY, THE SCHUR ALGORITHM AND MULTIDIMENSIONAL ANALYSIS DANIEL ALPAY 2007-06-28

THIS VOLUME CONTAINS SIX PEER-REFEREED ARTICLES WRITTEN ON THE OCCASION OF THE WORKSHOP OPERATOR THEORY, SYSTEM THEORY AND SCATTERING THEORY: MULTIDIMENSIONAL GENERALIZATIONS AND RELATED TOPICS, HELD AT THE DEPARTMENT OF MATHEMATICS OF THE BEN-GURION UNIVERSITY OF THE NEGEV IN JUNE, 2005. THE BOOK WILL INTEREST A WIDE AUDIENCE OF PURE AND APPLIED MATHEMATICIANS, ELECTRICAL ENGINEERS AND THEORETICAL PHYSICISTS.

ABEL'S THEOREM IN PROBLEMS AND SOLUTIONS V.B. ALEKSEEV 2007-05-08 DO FORMULAS EXIST FOR THE SOLUTION TO ALGEBRAICAL EQUATIONS IN ONE VARIABLE OF ANY DEGREE LIKE THE FORMULAS FOR QUADRATIC EQUATIONS? THE MAIN AIM OF THIS BOOK IS TO GIVE NEW GEOMETRICAL PROOF OF ABEL'S THEOREM, AS PROPOSED BY PROFESSOR V.I. ARNOLD. THE THEOREM STATES THAT FOR GENERAL

ALGEBRAICAL EQUATIONS OF A DEGREE HIGHER THAN 4, THERE ARE NO FORMULAS REPRESENTING ROOTS OF THESE EQUATIONS IN TERMS OF COEFFICIENTS WITH ONLY ARITHMETIC OPERATIONS AND RADICALS. A SECONDARY, AND MORE IMPORTANT AIM OF THIS BOOK, IS TO ACQUAINT THE READER WITH TWO VERY IMPORTANT BRANCHES OF MODERN MATHEMATICS: GROUP THEORY AND THEORY OF FUNCTIONS OF A COMPLEX VARIABLE. THIS BOOK ALSO HAS THE ADDED BONUS OF AN EXTENSIVE APPENDIX DEVOTED TO THE DIFFERENTIAL GALOIS THEORY, WRITTEN BY PROFESSOR A.G. KHOVANSKII. AS THIS TEXT HAS BEEN WRITTEN ASSUMING NO SPECIALIST PRIOR KNOWLEDGE AND IS COMPOSED OF DEFINITIONS, EXAMPLES, PROBLEMS AND SOLUTIONS, IT IS SUITABLE FOR SELF-STUDY OR TEACHING STUDENTS OF MATHEMATICS, FROM HIGH SCHOOL TO GRADUATE.

RECENT DEVELOPMENTS IN COMPLEX ANALYSIS AND COMPUTER ALGEBRA R.P. GILBERT 2013-12-01 THIS VOLUME CONSISTS OF PAPERS PRESENTED IN THE SPECIAL SESSIONS ON "COMPLEX AND NUMERICAL ANALYSIS", "VALUE DISTRIBUTION THEORY AND COMPLEX DOMAINS", AND "USE OF SYMBOLIC COMPUTATION IN MATHEMATICS EDUCATION" OF THE ISAAC '97 CONGRESS HELD AT THE UNIVERSITY OF DELAWARE, DURING JUNE 2-7, 1997. THE ISAAC CONGRESS COINCIDED WITH A U.S.-JAPAN SEMINAR ALSO HELD AT THE UNIVERSITY OF DELAWARE. THE LATTER WAS SUPPORTED BY THE NATIONAL SCIENCE FOUNDATION

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THROUGH GRANT INT-9603029 AND THE JAPAN SOCIETY FOR THE PROMOTION OF SCIENCE THROUGH GRANT MTCS-134. IT WAS NATURAL THAT THE PARTICIPANTS OF BOTH MEETINGS SHOULD INTERACT AND CONSEQUENTLY SEVERAL PERSONS ATTENDING THE CONGRESS ALSO PRESENTED PAPERS IN THE SEMINAR. THE SUCCESS OF THE ISAAC CONGRESS AND THE U.S.-JAPAN SEMINAR HAS LED TO THE ISAAC'99 CONGRESS BEING HELD IN FUKUOKA, JAPAN DURING AUGUST 1999. MANY OF THE SAME PARTICIPANTS WILL RETURN TO THIS SEMINAR. INDEED, IT APPEARS THAT THE SPIRIT OF THE U.S.-JAPAN SEMINAR WILL BE CONTINUED EVERY SECOND YEAR AS PART OF THE ISAAC CONGRESSES. WE DECIDED TO INCLUDE WITH THE PAPERS PRESENTED IN THE ISAAC CONGRESS AND THE U.S.-JAPAN SEMINAR SEVERAL VERY GOOD PAPERS BY COLLEAGUES FROM THE FORMER SOVIET UNION. THESE PARTICIPANTS IN THE ISAAC CONGRESS ATTENDED AT THEIR OWN EXPENSE.

ADVANCES IN CONTROL EDUCATION 2003 (ACE 2003)
JUHA LINDFORS 2003 ADVANCES IN CONTROL EDUCATION 2003 - THE 6TH IFAC SYMPOSIUM ON ADVANCES IN CONTROL EDUCATION WAS AN INTERNATIONAL FORUM FOR SCIENTISTS AND PRACTITIONERS INVOLVED IN THE FIELD OF CONTROL EDUCATION TO PRESENT THEIR LATEST RESEARCH, RESULTS AND IDEAS. THE SYMPOSIUM ALSO AIMED TO DISSEMINATE KNOWLEDGE AND EXPERIENCE IN ALTERNATIVE METHODS AND APPROACHES IN EDUCATION. IN ADDITION TO

THREE PLENARY LECTURES AND THE TECHNICAL VISIT, THE SYMPOSIUM INCLUDED 12 REGULAR SESSIONS AND PANEL DISCUSSION SESSION ON THE TOPIC "WEB- WITH OR WITHOUT". TECHNICAL SESSIONS CONCENTRATED ON NEW SOFTWARE TOOLS IN CONTROL EDUCATION ESPECIALLY ON THE ROLE OF INTERACTION IN CONTROL ENGINEERING EDUCATION, WEB-BASED SYSTEMS AND REMOTE LABORATORIES AND ON LABORATORY EXPERIMENTS. PRESENTS AND ILLUSTRATES NEW APPROACHES TO THE EFFECTIVE UTILISATION OF NEW SOFTWARE TOOLS IN CONTROL ENGINEERING EDUCATION IDENTIFIES THE IMPORTANT ROLE REMOTE LABORATORIES PLAY IN THE DEVELOPMENT OF CONTROL EDUCATION

MEROMORPHIC FUNCTIONS AND LINEAR ALGEBRA OLAVI NEVANLINNA 2003 THE MAIN GOAL OF THE BOOK IS TO STUDY THE BEHAVIOR OF THE RESOLVENT OF A MATRIX UNDER THE PERTURBATION BY LOW RANK MATRICES. WHEREAS THE EIGENVALUES, THAT IS, THE POLES OF THE RESOLVENT, AND THE PSEUDOSPECTRA, THAT IS, THE SETS WHERE THE RESOLVENT TAKES LARGE VALUES, CAN MOVE DRAMATICALLY UNDER SUCH PERTURBATIONS, THE GROWTH OF THE RESOLVENT AS A MATRIX-VALUED MEROMORPHIC FUNCTION REMAINS ESSENTIALLY UNCHANGED. THIS HAS PRACTICAL IMPLICATIONS TO THE ANALYSIS OF ITERATIVE SOLVERS FOR LARGE SYSTEMS OF LINEAR ALGEBRAIC EQUATIONS. THE BOOK FIRST GIVES AN INTRODUCTION TO THE BASICS OF VALUE

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DISTRIBUTION THEORY OF MEROMORPHIC SCALAR FUNCTIONS. THEN IT INTRODUCES A NEW NONLINEAR TOOL FOR LINEAR ALGEBRA, THE TOTAL LOGARITHMIC SIZE OF A MATRIX, WHICH ALLOWS FOR A NONTRIVIAL GENERALIZATION OF ROLF NEVANLINNA'S CHARACTERISTIC FUNCTION FROM THE SCALAR THEORY TO MATRIX- AND OPERATOR-VALUED FUNCTIONS. IN PARTICULAR, THE THEORY OF PERTURBATIONS BY LOW RANK MATRICES BECOMES POSSIBLE. AS AN EXAMPLE, IF THE SPECTRUM OF A NORMAL MATRIX COLLAPSES UNDER A LOW RANK PERTURBATION, THERE IS ALWAYS A COMPENSATION IN TERMS OF THE LOSS OF ORTHOGONALITY OF THE EIGENVECTORS. THIS QUALITATIVE PHENOMENON IS MADE QUANTITATIVE BY USING THE DEVELOPED TOOLS. APPLICATIONS ARE GIVEN TO RATIONAL APPROXIMATION, TO THE KREISS MATRIX THEOREM, AND TO CONVERGENCE OF KRYLOV SOLVERS. SOME RESULTS APPEAR HERE FOR THE FIRST TIME, WHILE THE REST ARE EXTENDED FROM RECENT PAPERS OF THE AUTHOR. THE BOOK IS INTENDED FOR RESEARCHERS IN MATHEMATICS IN GENERAL AND ESPECIALLY FOR THOSE WORKING IN NUMERICAL LINEAR ALGEBRA. MUCH OF THE BOOK IS UNDERSTANDABLE IF THE READER HAS A GOOD BACKGROUND IN LINEAR ALGEBRA AND A FIRST COURSE IN COMPLEX ANALYSIS.

GEOMETRY AND ANALYSIS ON COMPLEX MANIFOLDS TOSHIKI MABUCHI 1994 THIS VOLUME PRESENTS PAPERS DEDICATED TO PROFESSOR SHOSHICHI KOBAYASHI, COMMEMORATING THE

OCCASION OF HIS SIXTIETH BIRTHDAY ON JANUARY 4, 1992. THE PRINCIPAL THEME OF THIS VOLUME IS "GEOMETRY AND ANALYSIS ON COMPLEX MANIFOLDS". IT EMPHASIZES THE WIDE MATHEMATICAL INFLUENCE THAT PROFESSOR KOBAYASHI HAS ON AREAS RANGING FROM DIFFERENTIAL GEOMETRY TO COMPLEX ANALYSIS AND ALGEBRAIC GEOMETRY. IT COVERS VARIOUS MATERIALS INCLUDING HOLOMORPHIC VECTOR BUNDLES ON COMPLEX MANIFOLDS, KÄHLER METRICS AND EINSTEIN-HERMITIAN METRICS, GEOMETRIC FUNCTION THEORY IN SEVERAL COMPLEX VARIABLES, AND SYMPLECTIC OR NON-KÄHLER GEOMETRY ON COMPLEX MANIFOLDS. THESE ARE AREAS IN WHICH PROFESSOR KOBAYASHI HAS MADE STRONG IMPACT AND IS CONTINUING TO MAKE MANY DEEP INVALUABLE CONTRIBUTIONS.

MEROMORPHIC FUNCTIONS AND ANALYTIC CURVES HERMANN WEYL 1943 THE DESCRIPTION FOR THIS BOOK, *MEROMORPHIC FUNCTIONS AND ANALYTIC CURVES*. (AM-12), WILL BE FORTHCOMING.

A POLYNOMIAL APPROACH TO LINEAR ALGEBRA PAUL A. FUHRMANN 2012-10-01 A POLYNOMIAL APPROACH TO LINEAR ALGEBRA IS A TEXT WHICH IS HEAVILY BIASED TOWARDS FUNCTIONAL METHODS. IN USING THE SHIFT OPERATOR AS A CENTRAL OBJECT, IT MAKES LINEAR ALGEBRA A PERFECT INTRODUCTION TO OTHER AREAS OF MATHEMATICS, OPERATOR THEORY IN PARTICULAR. THIS TECHNIQUE IS VERY POWERFUL AS BECOMES CLEAR FROM THE

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ANALYSIS OF CANONICAL FORMS (FROBENIUS, JORDAN). IT SHOULD BE EMPHASIZED THAT THESE FUNCTIONAL METHODS ARE NOT ONLY OF GREAT THEORETICAL INTEREST, BUT LEAD TO COMPUTATIONAL ALGORITHMS. QUADRATIC FORMS ARE TREATED FROM THE SAME PERSPECTIVE, WITH EMPHASIS ON THE IMPORTANT EXAMPLES OF BEZOUTIAN AND HANKEL FORMS. THESE TOPICS ARE OF GREAT IMPORTANCE IN APPLIED AREAS SUCH AS SIGNAL PROCESSING, NUMERICAL LINEAR ALGEBRA, AND CONTROL THEORY. STABILITY THEORY AND SYSTEM THEORETIC CONCEPTS, UP TO REALIZATION THEORY, ARE TREATED AS AN INTEGRAL PART OF LINEAR ALGEBRA. FINALLY THERE IS A CHAPTER ON HANKEL NORM APPROXIMATION FOR THE CASE OF SCALAR RATIONAL FUNCTIONS WHICH ALLOWS THE READER TO ACCESS IDEAS AND RESULTS ON THE FRONTIER OF CURRENT RESEARCH.

INTERPOLATION AND REALIZATION THEORY WITH APPLICATIONS TO CONTROL THEORY VLADIMIR

BOLOTNIKOV 2019-04-08 THIS VOLUME IS DEVOTED TO JOSEPH A. (JOE) BALL'S CONTRIBUTIONS TO OPERATOR THEORY AND ITS APPLICATIONS AND IN CELEBRATION OF HIS SEVENTIETH BIRTHDAY. JOE BALL'S CAREER SPANS OVER FOUR AND A HALF DECADES, STARTING WITH HIS WORK ON MODEL THEORY AND RELATED TOPICS FOR NON-CONTRACTIONS AND OPERATORS ON MULTIPLY CONNECTED DOMAINS. LATER ON, MORE APPLIED OPERATOR THEORY THEMES APPEARED IN HIS WORK, INVOLVING FACTORIZATION AND INTERPOLATION FOR

OPERATOR-VALUED FUNCTIONS, WITH EXTENSIVE APPLICATIONS IN SYSTEM AND CONTROL THEORY. HE HAS WORKED ON NONLINEAR CONTROL, TIME-VARYING SYSTEMS AND, MORE RECENTLY, ON MULTIDIMENSIONAL SYSTEMS AND NONCOMMUTATIVE H^∞ -THEORY ON THE UNIT BALL AND POLYDISK, AND MORE GENERAL DOMAINS, AND THESE ARE ONLY THE MAIN THEMES IN HIS VAST OEUVRE. FOURTEEN RESEARCH PAPERS CONSTITUTE THE CORE OF THIS VOLUME, WRITTEN BY MATHEMATICIANS WHO HAVE COLLABORATED WITH JOE OR HAVE BEEN INFLUENCED BY HIS VAST MATHEMATICAL WORK. A CURRICULUM VITAE, A PUBLICATIONS LIST AND A LIST OF JOE BALL'S PHD STUDENTS ARE INCLUDED IN THIS VOLUME, AS WELL AS PERSONAL REMINISCENCES BY COLLEAGUES AND FRIENDS. CONTRIBUTIONS BY YU. M. ARLINSKII, S. HASSI, M. AUGAT, J. W. HELTON, I. KLEP, S. MCCULLOUGH, S. BALASUBRAMANIAN, U. WIJESOORIYA, N. COHEN, Q. FANG, S. GORAI, J. SARKAR, G. J. GROENEWALD, S. TER HORST, J. JAFTHA, A. C. M. RAN, M.A. KAASHOEK, F. VAN SCHAGEN, A. KHEIFETS, Z. A. LYKOVA, N. J. YOUNG, A. E. AJIBO, R. T. W. MARTIN, A. RAMANANTOANINA, M.-J. Y. OU, H. J. WOERDEMAN, A. VAN DER SCHAFT, A. TANNENBAUM, T. T. GEORGIU, J. O. DEASY AND L. NORTON.

LINEAR ALGEBRA FOR CONTROL THEORY PAUL VAN DOOREN 2012-12-06 DURING THE PAST DECADE THE INTERACTION BETWEEN CONTROL THEORY AND LINEAR ALGEBRA HAS BEEN EVER INCREASING, GIVING RISE TO NEW RESULTS IN BOTH

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AREAS. AS A NATURAL OUTFLOW OF THIS RESEARCH, THIS BOOK PRESENTS INFORMATION ON THIS INTERDISCIPLINARY AREA. THE CROSS-FERTILIZATION BETWEEN CONTROL AND LINEAR ALGEBRA CAN BE FOUND IN SUBFIELDS SUCH AS NUMERICAL LINEAR ALGEBRA, CANONICAL FORMS, RING-THEORETIC METHODS, MATRIX THEORY, AND ROBUST CONTROL. THIS BOOK'S EDITORS WERE CHALLENGED TO PRESENT THE LATEST RESULTS IN THESE AREAS AND TO FIND POINTS OF COMMON INTEREST. THIS VOLUME REFLECTS VERY NICELY THE INTERACTION: THE RANGE OF TOPICS SEEMS VERY WIDE INDEED, BUT THE BASIC PROBLEMS AND TECHNIQUES ARE ALWAYS CLOSELY CONNECTED. AND THE COMMON DENOMINATOR IN ALL OF THIS IS, OF COURSE, LINEAR ALGEBRA. THIS BOOK IS SUITABLE FOR BOTH MATHEMATICIANS AND STUDENTS.

MATHEMATICAL REVIEWS 2008

ARITHMETIC AND GEOMETRY OVER LOCAL FIELDS BRUNO ANGLI s 2021-03-03 THIS VOLUME INTRODUCES SOME RECENT DEVELOPMENTS IN ARITHMETIC GEOMETRY OVER LOCAL FIELDS. ITS SEVEN CHAPTERS ARE CENTERED AROUND TWO COMMON THEMES: THE STUDY OF DRINFELD MODULES AND NON-ARCHIMEDEAN ANALYTIC GEOMETRY. THE NOTES GREW OUT OF LECTURES HELD DURING THE RESEARCH PROGRAM "ARITHMETIC AND GEOMETRY OF LOCAL AND GLOBAL FIELDS" WHICH TOOK PLACE AT THE VIETNAM INSTITUTE OF ADVANCED STUDY IN MATHEMATICS (VIASM) FROM JUNE TO

AUGUST 2018. THE AUTHORS, LEADING EXPERTS IN THE FIELD, HAVE PUT GREAT EFFORT INTO MAKING THE TEXT AS SELF-CONTAINED AS POSSIBLE, INTRODUCING THE BASIC TOOLS OF THE SUBJECT. THE NUMEROUS CONCRETE EXAMPLES AND SUGGESTED RESEARCH PROBLEMS WILL ENABLE GRADUATE STUDENTS AND YOUNG RESEARCHERS TO QUICKLY REACH THE FRONTIERS OF THIS FASCINATING BRANCH OF MATHEMATICS.

GEOMETRY AND ANALYSIS ON COMPLEX MANIFOLDS T MABUCHI 1994-12-09 THIS VOLUME PRESENTS PAPERS DEDICATED TO PROFESSOR SHOSHICHI KOBAYASHI, COMMEMORATING THE OCCASION OF HIS SIXTIETH BIRTHDAY ON JANUARY 4, 1992. THE PRINCIPAL THEME OF THIS VOLUME IS "GEOMETRY AND ANALYSIS ON COMPLEX MANIFOLDS". IT EMPHASIZES THE WIDE MATHEMATICAL INFLUENCE THAT PROFESSOR KOBAYASHI HAS ON AREAS RANGING FROM DIFFERENTIAL GEOMETRY TO COMPLEX ANALYSIS AND ALGEBRAIC GEOMETRY. IT COVERS VARIOUS MATERIALS INCLUDING HOLOMORPHIC VECTOR BUNDLES ON COMPLEX MANIFOLDS, KÄHLER METRICS AND EINSTEIN-HERMITIAN METRICS, GEOMETRIC FUNCTION THEORY IN SEVERAL COMPLEX VARIABLES, AND SYMPLECTIC OR NON-KÄHLER GEOMETRY ON COMPLEX MANIFOLDS. THESE ARE AREAS IN WHICH PROFESSOR KOBAYASHI HAS MADE STRONG IMPACT AND IS CONTINUING TO MAKE MANY DEEP INVALUABLE CONTRIBUTIONS. CONTENTS: COMPLEX FINSLER METRICS (M ABATE & G PATRIZIO) STABLE SHEAVES AND

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EINSTEIN-HERMITIAN METRICS (S BANDO & Y-T SIU) GENERALIZATIONS OF ALBANESE MAPPINGS FOR NON-KÄHLER MANIFOLDS (I ENOKI) EXAMPLES OF COMPACT HOLOMORPHIC SYMPLECTIC MANIFOLDS WHICH ADMIT NO KÄHLER STRUCTURE (D GUAN) A TORELLI-TYPE THEOREM FOR STABLE CURVES (Y IMAYOSHI & T MABUCHI) LINEAR ALGEBRA OF ANALYTIC TORSION (H-J KIM) KP EQUATIONS AND VECTOR BUNDLES ON CURVES (Y-C LI) SOME TOPICS IN NEVANLINNA THEORY, HYPERBOLIC MANIFOLDS AND DIOPHANTINE GEOMETRY (J NOGUCHI) ON THE EXTENSION OF L^2 HOLOMORPHIC FUNCTIONS IV: A NEW DENSITY CONCEPT (T OHSAWA) SYMPLECTIC TOPOLOGY AND COMPLEX SURFACES (Y-B RUAN) AUTOMORPHISMS OF TUBE DOMAINS (S SHIMIZU) TENSOR PRODUCTS OF SEMISTABLES ARE SEMISTABLE (B TOTARO) READERSHIP: MATHEMATICIANS. KEYWORDS: GEOMETRY; ANALYSIS; COMPLEX MANIFOLDS; Festschrift

RATIONAL APPROXIMATIONS FROM POWER SERIES OF VECTOR-VALUED MEROMORPHIC FUNCTIONS AVRAM SIDI 1992

GALOIS THEORY OF DIFFERENCE EQUATIONS MARIUS VAN DER PUT 2006-11-14 THIS BOOK LAYS THE ALGEBRAIC FOUNDATIONS OF A GALOIS THEORY OF LINEAR DIFFERENCE EQUATIONS AND SHOWS ITS RELATIONSHIP TO THE ANALYTIC PROBLEM OF FINDING MEROMORPHIC FUNCTIONS ASYMPTOTIC TO FORMAL SOLUTIONS OF DIFFERENCE EQUATIONS.

meromorphic-functions-and-linear-algebra

CLASSICALLY, THIS LATTER QUESTION WAS ATTACKED BY BIRKHOFF AND TRITZINSKY AND THE PRESENT WORK CORRECTS AND GREATLY GENERALIZES THEIR CONTRIBUTIONS. IN ADDITION RESULTS ARE PRESENTED CONCERNING THE INVERSE PROBLEM IN GALOIS THEORY, EFFECTIVE COMPUTATION OF GALOIS GROUPS, ALGEBRAIC PROPERTIES OF SEQUENCES, PHENOMENA IN POSITIVE CHARACTERISTICS, AND q -DIFFERENCE EQUATIONS. THE BOOK IS AIMED AT ADVANCED GRADUATE RESEARCHERS AND RESEARCHERS.

ENTIRE AND MEROMORPHIC FUNCTIONS LEE A. RUBEL 1996-02-28 MATHEMATICS IS A BEAUTIFUL SUBJECT, AND ENTIRE FUNCTIONS IS ITS MOST BEAUTIFUL BRANCH. EVERY ASPECT OF MATHEMATICS ENTERS INTO IT, FROM ANALYSIS, ALGEBRA, AND GEOMETRY ALL THE WAY TO DIFFERENTIAL EQUATIONS AND LOGIC. FOR EXAMPLE, MY FAVORITE THEOREM IN ALL OF MATHEMATICS IS A THEOREM OF R. NEVANLINNA THAT TWO FUNCTIONS, MEROMORPHIC IN THE WHOLE COMPLEX PLANE, THAT SHARE FIVE VALUES MUST BE IDENTICAL. FOR REAL FUNCTIONS, THERE IS NOTHING THAT EVEN REMOTELY CORRESPONDS TO THIS. THIS BOOK IS AN INTRODUCTION TO THE THEORY OF ENTIRE AND MEROMORPHIC FUNCTIONS, WITH A HEAVY EMPHASIS ON NEVANLINNA THEORY, OTHERWISE KNOWN AS VALUE-DISTRIBUTION THEORY. THINGS INCLUDED HERE THAT OCCUR IN NO OTHER BOOK (THAT WE ARE AWARE OF) ARE THE FOURIER SERIES METHOD FOR ENTIRE AND MERO MORPHIC FUNCTIONS, A STUDY

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OF INTEGER VALUED ENTIRE FUNCTIONS, THE MALLIAVIN RUBEL EXTENSION OF CARLSON'S THEOREM (THE "SAMPLING THEOREM"), AND THE FIRST-ORDER THEORY OF THE RING OF ALL ENTIRE FUNCTIONS, AND A FINAL CHAPTER ON TARSKI'S "HIGH SCHOOL ALGEBRA PROBLEM," A TOPIC FROM MATHEMATICAL LOGIC THAT CONNECTS WITH ENTIRE FUNCTIONS. THIS BOOK GREW OUT OF A SET OF CLASSROOM NOTES FOR A COURSE GIVEN AT THE UNIVERSITY OF ILLINOIS IN 1963, BUT THEY HAVE BEEN MUCH CHANGED, CORRECTED, EXPANDED, AND UPDATED, PARTIALLY FOR A SIMILAR COURSE AT THE SAME PLACE IN 1993. MY THANKS TO THE MANY STUDENTS WHO PREPARED NOTES AND HAVE GIVEN CORRECTIONS AND COMMENTS.

ENTIRE AND MEROMORPHIC FUNCTIONS LEE A. RUBEL
2012-12-06 MATHEMATICS IS A BEAUTIFUL SUBJECT, AND ENTIRE FUNCTIONS IS ITS MOST BEAUTIFUL BRANCH. EVERY ASPECT OF MATHEMATICS ENTERS INTO IT, FROM ANALYSIS, ALGEBRA, AND GEOMETRY ALL THE WAY TO DIFFERENTIAL EQUATIONS AND LOGIC. FOR EXAMPLE, MY FAVORITE THEOREM IN ALL OF MATHEMATICS IS A THEOREM OF R. NEVANJINNA THAT TWO FUNCTIONS, MEROMORPHIC IN THE WHOLE COMPLEX PLANE, THAT SHARE FIVE VALUES MUST BE IDENTICAL. FOR REAL FUNCTIONS, THERE IS NOTHING THAT EVEN REMOTELY CORRESPONDS TO THIS. THIS BOOK IS AN INTRODUCTION TO THE THEORY OF ENTIRE AND MEROMORPHIC FUNCTIONS, WITH A HEAVY EMPHASIS ON NEVANLINNA

THEORY, OTHERWISE KNOWN AS VALUE-DISTRIBUTION THEORY. THINGS INCLUDED HERE THAT OCCUR IN NO OTHER BOOK (THAT WE ARE AWARE OF) ARE THE FOURIER SERIES METHOD FOR ENTIRE AND MERO MORPHIC FUNCTIONS, A STUDY OF INTEGER VALUED ENTIRE FUNCTIONS, THE MALLIAVIN RUBEL EXTENSION OF CARLSON'S THEOREM (THE "SAMPLING THEOREM"), AND THE FIRST-ORDER THEORY OF THE RING OF ALL ENTIRE FUNCTIONS, AND A FINAL CHAPTER ON TARSKI'S "HIGH SCHOOL ALGEBRA PROBLEM," A TOPIC FROM MATHEMATICAL LOGIC THAT CONNECTS WITH ENTIRE FUNCTIONS. THIS BOOK GREW OUT OF A SET OF CLASSROOM NOTES FOR A COURSE GIVEN AT THE UNIVERSITY OF ILLINOIS IN 1963, BUT THEY HAVE BEEN MUCH CHANGED, CORRECTED, EXPANDED, AND UPDATED, PARTIALLY FOR A SIMILAR COURSE AT THE SAME PLACE IN 1993. MY THANKS TO THE MANY STUDENTS WHO PREPARED NOTES AND HAVE GIVEN CORRECTIONS AND COMMENTS.

SYMBOLIC ALGEBRAIC METHODS AND VERIFICATION METHODS
Gtz ALEFELD 2012-12-06 THE USUAL "IMPLEMENTATION" OF REAL NUMBERS AS FLOATING POINT NUMBERS ON EXISTING COMPUTERS HAS THE WELL-KNOWN DISADVANTAGE THAT MOST OF THE REAL NUMBERS ARE NOT EXACTLY REPRESENTABLE IN FLOATING POINT. ALSO THE FOUR BASIC ARITHMETIC OPERATIONS CAN USUALLY NOT BE PERFORMED EXACTLY. DURING THE LAST YEARS RESEARCH IN DIFFERENT AREAS HAS BEEN INTENSIFIED IN ORDER TO

OVERCOME THESE PROBLEMS. (LEDA-LIBRARY BY K. MEHLHORN ET AL., "EXACT ARITHMETIC WITH REAL NUMBERS" BY A. EDALAT ET AL., SYMBOLIC ALGEBRAIC METHODS, VERIFICATION METHODS). THE LATEST DEVELOPMENT IS THE COMBINATION OF SYMBOLIC-ALGEBRAIC METHODS AND VERIFICATION METHODS TO SO-CALLED HYBRID METHODS. - THIS BOOK CONTAINS A COLLECTION OF WORKED OUT TALKS ON THESE SUBJECTS GIVEN DURING A DAGSTUHL SEMINAR AT THE FORSCHUNGSZENTRUM FÜR INFORMATIK, SCHLOß DAGSTUHL, GERMANY, PRESENTING THE STATE OF THE ART.

MEROMORPHIC FUNCTIONS OVER NON-ARCHIMEDEAN FIELDS
 PEI-CHU HU 2012-12-06 NEVANLINNA THEORY (OR VALUE DISTRIBUTION THEORY) IN COMPLEX ANALYSIS IS SO BEAUTIFUL THAT ONE WOULD NATURALLY BE INTERESTED IN DETERMINING HOW SUCH A THEORY WOULD LOOK IN THE NON ARCHIMEDEAN ANALYSIS AND DIOPHANTINE APPROXIMATIONS. THERE ARE TWO "MAIN THEOREMS" AND DEFECT RELATIONS THAT OCCUPY A CENTRAL PLACE IN NEVANLINNA THEORY. THEY GENERATE A LOT OF APPLICATIONS IN STUDYING UNIQUENESS OF MEROMORPHIC FUNCTIONS, GLOBAL SOLUTIONS OF DIFFERENTIAL EQUATIONS, DYNAMICS, AND SO ON. IN THIS BOOK, WE WILL INTRODUCE NON-ARCHIMEDEAN ANALOGUES OF NEVANLINNA THEORY AND ITS APPLICATIONS. IN VALUE DISTRIBUTION THEORY, THE MAIN PROBLEM IS THAT GIVEN A HOLOMORPHIC CURVE $f: C \rightarrow M$ INTO A PROJECTIVE VARIETY M OF DIMENSION n AND A FAMILY $\mathcal{O}(1)$ OF

HYPERSURFACES ON M , UNDER A PROPER CONDITION OF NON-DEGENERACY ON f , FIND THE DEFECT RELATION. IF $\mathcal{O}(1)$ IS A FAMILY OF HYPERPLANES ON $M = \mathbb{P}^n$ IN GENERAL POSITION AND IF THE SMALLEST DIMENSION OF LINEAR SUBSPACES CONTAINING THE IMAGE $f(C)$ IS k , CARTAN CONJECTURED THAT THE BOUND OF DEFECT RELATION IS $2n - k + 1$. GENERALLY, IF $\mathcal{O}(1)$ IS A FAMILY OF ADMISSIBLE OR NORMAL CROSSINGS HYPERSURFACES, THERE ARE RESPECTIVELY SHIFFMAN'S CONJECTURE AND GRIFFITHS-LANG'S CONJECTURE. HERE WE LIST THE PROCESS OF THIS PROBLEM: A. COMPLEX ANALYSIS: (I) CONSTANT TARGETS: R. NEVANLINNA [98] FOR $n = k = 1$; H. CARTAN [20] FOR $n = k > 1$; E. I. NOCHKA [99], [100], [101] FOR $n > k \sim 1$; SHIFFMAN'S CONJECTURE PARTIALLY SOLVED BY HU-YANG [71]; GRIFFITHS-LANG'S CONJECTURE (OPEN).

LINEAR ALGEBRA AND ITS APPLICATIONS TZUONG-TSIENG MOH 2020-10-21 FROM TZUONG-TSIENG MOH, A SEASONED EXPERT IN ALGEBRA, COMES A NEW BOOK FOR STUDENTS TO BETTER UNDERSTAND LINEAR ALGEBRA. WRITING FROM AN EXPERIENCED STANDPOINT, MOH COVERS THE MANY STANDARD ASPECTS COMPRISING LINEAR ALGEBRA, SUCH AS ECHELON FORMS, MATRIX ALGEBRA, LINEAR TRANSFORMATIONS, AND MORE. MOH FURTHER INCLUDES SEVERAL ADVANCED TOPICS AND APPLICATIONS, AS WELL AS SELF-CORRECTING CODES, HEISENBERG'S UNCERTAINTY PRINCIPLE, MAXWELL'S EQUATIONS IN RELATIVITY FORM,

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GOOGLE'S SEARCH ENGINE, AND THE THEORY OF FINITELY GENERATED MODULES OVER A PID. THIS BOOK IS IDEAL FOR BOTH NEWCOMERS AND EXPERIENCED READERS WHO WANT TO ATTAIN A DEEPER UNDERSTANDING ON BOTH THE BASICS AND ADVANCED TOPICS OF LINEAR ALGEBRA AND ITS VAST APPLICATIONS. THE WIDE RANGE OF TOPICS COMBINED WITH THE DEPTH OF EACH DISCUSSION MAKE IT ESSENTIAL TO BE ON THE SHELF OF EVERY MATHEMATICAL BEGINNER AND ENTHUSIAST.

REPORT OF NRL PROGRESS NAVAL RESEARCH LABORATORY (U.S.) 1971

NONCOMMUTATIVE GEOMETRY AND PHYSICS ALAN L. CAREY 2011 THIS COLLECTION OF EXPOSITORY ARTICLES GREW OUT OF THE WORKSHOP "NUMBER THEORY AND PHYSICS" HELD IN MARCH 2009 AT THE ERWIN SCHRODINGER INTERNATIONAL INSTITUTE FOR MATHEMATICAL PHYSICS, VIENNA. THE COMMON THEME OF THE ARTICLES IS THE INFLUENCE OF IDEAS FROM NONCOMMUTATIVE GEOMETRY (NCG) ON SUBJECTS RANGING FROM NUMBER THEORY TO LIE ALGEBRAS, INDEX THEORY, AND MATHEMATICAL PHYSICS. MATILDE MARCOLLI'S ARTICLE GIVES A SURVEY OF RELEVANT ASPECTS OF NCG IN NUMBER THEORY, BUILDING ON AN INTRODUCTION TO MOTIVES FOR BEGINNERS BY JORGE PLAZAS AND SUJATHA RAMDORAI. A MILDLY UNCONVENTIONAL VIEW OF INDEX THEORY, FROM THE VIEWPOINT OF NCG, IS DESCRIBED IN THE ARTICLE BY ALAN CAREY, JOHN PHILLIPS,

AND ADAM RENNIE. AS DEVELOPED BY ALAIN CONNES AND DIRK KREIMER, NCG ALSO PROVIDES INSIGHT INTO NOVEL ALGEBRAIC STRUCTURES UNDERLYING MANY ANALYTIC ASPECTS OF QUANTUM FIELD THEORY. DOMINIQUE MANCHON'S ARTICLE ON PRE-LIE ALGEBRAS FITS INTO THIS DEVELOPING RESEARCH AREA. THIS INTERPLAY OF ALGEBRAIC AND ANALYTIC TECHNIQUES ALSO APPEARS IN THE ARTICLES BY CHRISTOPH BERGBAUER, WHO INTRODUCES RENORMALIZATION THEORY AND FEYNMAN DIAGRAM METHODS, AND SYLVIE PAYCHA, WHO FOCUSES ON RELATIONS BETWEEN RENORMALIZATION AND ZETA FUNCTION TECHNIQUES.

U.S. GOVERNMENT RESEARCH REPORTS 1964

TECHNICAL ABSTRACT BULLETIN DEFENSE DOCUMENTATION CENTER (U.S.) 1961-07

THE SCHUR ALGORITHM, REPRODUCING KERNEL SPACES AND SYSTEM THEORY DANIEL ALPAY 2001 GENERALIZED SCHUR FUNCTIONS HAVE IMPORTANT APPLICATIONS TO THE THEORY OF LINEAR OPERATORS, TO SIGNAL PROCESSING AND CONTROL THEORY, AND TO OTHER AREAS OF ENGINEERING. IN THIS BOOK, ALPAY LOOKS AT MATRIX-VALUED SCHUR FUNCTIONS AND THEIR APPLICATIONS FROM THE UNIFYING POINT OF VIEW OF SPACES WITH REPRODUCING KERNELS. THIS APPROACH IS USED HERE TO STUDY THE RELATIONSHIP BETWEEN THE MODELING OF TIME-INVARIANT DISSIPATIVE LINEAR SYSTEMS AND THE THEORY OF LINEAR OPERATORS. THE INVERSE SCATTERING PROBLEM PLAYS A KEY ROLE IN THE EXPOSITION. THE POINT

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OF VIEW ALSO ALLOWS FOR A NATURAL WAY TO TACKLE MORE GENERAL CASES, SUCH AS NONSTATIONARY SYSTEMS, NON-POSITIVE METRICS, AND PAIRS OF COMMUTING NONSELF-ADJOINT OPERATORS. TRANSLATED BY STEPHEN S. WILSON.

DIFFERENTIAL GALOIS THEORY AND NON-INTEGRABILITY OF HAMILTONIAN SYSTEMS JUAN J. MORALES RUIZ

2012-12-06 THIS BOOK IS DEVOTED TO THE RELATION BETWEEN TWO DIFFERENT CONCEPTS OF INTEGRABILITY: THE COMPLETE INTEGRABILITY OF COMPLEX ANALYTICAL HAMILTONIAN SYSTEMS AND THE INTEGRABILITY OF COMPLEX ANALYTICAL LINEAR DIFFERENTIAL EQUATIONS. FOR LINEAR DIFFERENTIAL EQUATIONS, INTEGRABILITY IS MADE PRECISE WITHIN THE FRAMEWORK OF DIFFERENTIAL GALOIS THEORY. THE CONNECTION OF THESE TWO INTEGRABILITY NOTIONS IS GIVEN BY THE VARIATIONAL EQUATION (I.E. LINEARIZED EQUATION) ALONG A PARTICULAR INTEGRAL CURVE OF THE HAMILTONIAN SYSTEM. THE UNDERLYING HEURISTIC IDEA, WHICH MOTIVATED THE MAIN RESULTS PRESENTED IN THIS MONOGRAPH, IS THAT A NECESSARY CONDITION FOR THE INTEGRABILITY OF A HAMILTONIAN SYSTEM IS THE INTEGRABILITY OF THE VARIATIONAL EQUATION ALONG ANY OF ITS PARTICULAR INTEGRAL CURVES. THIS IDEA LED TO THE ALGEBRAIC NON-INTEGRABILITY CRITERIA FOR HAMILTONIAN SYSTEMS. THESE CRITERIA CAN BE CONSIDERED AS GENERALIZATIONS OF CLASSICAL NON-INTEGRABILITY RESULTS BY POINCARÉ AND LYAPUNOV, AS WELL AS MORE RECENT

RESULTS BY ZIGLIN AND YOSHIDA. THUS, BY MEANS OF THE DIFFERENTIAL GALOIS THEORY IT IS NOT ONLY POSSIBLE TO UNDERSTAND ALL THESE APPROACHES IN A UNIFIED WAY BUT ALSO TO IMPROVE THEM. SEVERAL IMPORTANT APPLICATIONS ARE ALSO INCLUDED: HOMOGENEOUS POTENTIALS, BIANCHI IX COSMOLOGICAL MODEL, THREE-BODY PROBLEM, HÉNON-HEILES SYSTEM, ETC. THE BOOK IS BASED ON THE ORIGINAL JOINT RESEARCH OF THE AUTHOR WITH J.M. PERIS, J.P. RAMIS AND C. SIMPSON, BUT AN EFFORT WAS MADE TO PRESENT THESE ACHIEVEMENTS IN THEIR LOGICAL ORDER RATHER THAN THEIR HISTORICAL ONE. THE NECESSARY BACKGROUND ON DIFFERENTIAL GALOIS THEORY AND HAMILTONIAN SYSTEMS IS INCLUDED, AND SEVERAL NEW PROBLEMS AND CONJECTURES WHICH OPEN NEW LINES OF RESEARCH ARE PROPOSED. - - - THE BOOK IS AN EXCELLENT INTRODUCTION TO NON-INTEGRABILITY METHODS IN HAMILTONIAN MECHANICS AND BRINGS THE READER TO THE FOREFRONT OF RESEARCH IN THE AREA. THE INCLUSION OF A LARGE NUMBER OF WORKED-OUT EXAMPLES, MANY OF WIDE APPLIED INTEREST, IS COMMENDABLE. THERE ARE MANY HISTORICAL REFERENCES, AND AN EXTENSIVE BIBLIOGRAPHY. (MATHEMATICAL REVIEWS) FOR READERS ALREADY PREPARED IN THE TWO PREREQUISITE SUBJECTS [DIFFERENTIAL GALOIS THEORY AND HAMILTONIAN DYNAMICAL SYSTEMS], THE AUTHOR HAS PROVIDED A LOGICALLY ACCESSIBLE ACCOUNT OF A REMARKABLE INTERACTION BETWEEN DIFFERENTIAL ALGEBRA AND DYNAMICS.

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(ZENTRALBLATT MATH)

FAMILIES OF MEROMORPHIC FUNCTIONS ON COMPACT RIEMANN SURFACES M. NAMBA 2006-11-15

ON PERIODIC LEFT FACTORS OF MEROMORPHIC FUNCTIONS

FRED GROSS 1969

FORMAL ALGORITHMIC ELIMINATION FOR PDES DANIEL

ROBERTZ 2014-10-13 INVESTIGATING THE CORRESPONDENCE BETWEEN SYSTEMS OF PARTIAL DIFFERENTIAL EQUATIONS AND THEIR ANALYTIC SOLUTIONS USING A FORMAL APPROACH, THIS MONOGRAPH PRESENTS ALGORITHMS TO DETERMINE THE SET OF ANALYTIC SOLUTIONS OF SUCH A SYSTEM AND CONVERSELY TO FIND DIFFERENTIAL EQUATIONS WHOSE SET OF SOLUTIONS COINCIDES WITH A GIVEN PARAMETRIZED SET OF ANALYTIC FUNCTIONS. AFTER GIVING A DETAILED INTRODUCTION TO JANET BASES AND THOMAS DECOMPOSITION, THE PROBLEM OF FINDING AN IMPLICIT DESCRIPTION OF CERTAIN SETS OF ANALYTIC FUNCTIONS IN TERMS OF DIFFERENTIAL EQUATIONS IS ADDRESSED. EFFECTIVE METHODS OF VARYING GENERALITY ARE DEVELOPED TO SOLVE THE DIFFERENTIAL ELIMINATION PROBLEMS THAT ARISE IN THIS CONTEXT. IN PARTICULAR, IT IS DEMONSTRATED HOW THE SYMBOLIC SOLUTION OF PARTIAL DIFFERENTIAL EQUATIONS PROFITS FROM THE STUDY OF THE IMPLICITIZATION PROBLEM. FOR INSTANCE, CERTAIN FAMILIES OF EXACT SOLUTIONS OF THE NAVIER-STOKES EQUATIONS CAN BE COMPUTED.

meromorphic-functions-and-linear-algebra

ELLIPTIC CURVES (SECOND EDITION) JAMES S MILNE

2020-08-20 THIS BOOK USES THE BEAUTIFUL THEORY OF ELLIPTIC CURVES TO INTRODUCE THE READER TO SOME OF THE DEEPER ASPECTS OF NUMBER THEORY. IT ASSUMES ONLY A KNOWLEDGE OF THE BASIC ALGEBRA, COMPLEX ANALYSIS, AND TOPOLOGY USUALLY TAUGHT IN FIRST-YEAR GRADUATE COURSES. AN ELLIPTIC CURVE IS A PLANE CURVE DEFINED BY A CUBIC POLYNOMIAL. ALTHOUGH THE PROBLEM OF FINDING THE RATIONAL POINTS ON AN ELLIPTIC CURVE HAS FASCINATED MATHEMATICIANS SINCE ANCIENT TIMES, IT WAS NOT UNTIL 1922 THAT MORDELL PROVED THAT THE POINTS FORM A FINITELY GENERATED GROUP. THERE IS STILL NO PROVEN ALGORITHM FOR FINDING THE RANK OF THE GROUP, BUT IN ONE OF THE EARLIEST IMPORTANT APPLICATIONS OF COMPUTERS TO MATHEMATICS, BIRCH AND SWINNERTON-DYER DISCOVERED A RELATION BETWEEN THE RANK AND THE NUMBERS OF POINTS ON THE CURVE COMPUTED MODULO A PRIME. CHAPTER IV OF THE BOOK PROVES MORDELL'S THEOREM AND EXPLAINS THE CONJECTURE OF BIRCH AND SWINNERTON-DYER. EVERY ELLIPTIC CURVE OVER THE RATIONAL NUMBERS HAS AN L-SERIES ATTACHED TO IT. HASSE CONJECTURED THAT THIS L-SERIES SATISFIES A FUNCTIONAL EQUATION, AND IN 1955 TANIYAMA SUGGESTED THAT HASSE'S CONJECTURE COULD BE PROVED BY SHOWING THAT THE L-SERIES ARISES FROM A MODULAR FORM. THIS WAS SHOWN TO BE CORRECT BY WILES (AND OTHERS) IN THE 1990S, AND, AS A CONSEQUENCE, ONE

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OBTAINS A PROOF OF FERMAT'S LAST THEOREM. CHAPTER V OF THE BOOK IS DEVOTED TO EXPLAINING THIS WORK. THE FIRST THREE CHAPTERS DEVELOP THE BASIC THEORY OF ELLIPTIC CURVES. FOR THIS EDITION, THE TEXT HAS BEEN COMPLETELY REVISED AND UPDATED.

STRUCTURED MATRICES IN MATHEMATICS, COMPUTER SCIENCE, AND ENGINEERING | VADIM OLSHEVSKY

TROPICAL VALUE DISTRIBUTION THEORY AND ULTRA-DISCRETE EQUATIONS RISTO KORHONEN 2015-03-17 THIS

IS THE FIRST TEXTBOOK-TYPE PRESENTATION OF TROPICAL VALUE DISTRIBUTION THEORY. IT PROVIDES A DETAILED INTRODUCTION OF THE TROPICAL VERSION OF THE NEVANLINNA THEORY, DESCRIBING GROWTH AND VALUE DISTRIBUTION ANALYSIS OF CONTINUOUS, PIECEWISE LINEAR FUNCTIONS ON THE REAL AXIS. THE BOOK ALSO INCLUDES APPLICATIONS OF THIS THEORY TO ULTRA-DISCRETE EQUATIONS. THREE APPENDICES ARE GIVEN TO COMPARE THE CONTENTS OF THE THEORY WITH THE CLASSICAL COUNTERPARTS IN COMPLEX ANALYSIS. DETAILED PRESENTATION OF THE PROOFS MAKES THE BOOK ACCESSIBLE FOR LECTURE COURSES AND INDEPENDENT STUDIES AT THE GRADUATE AND POST-DOCTORAL LEVEL.

CONTENTS: TROPICAL POLYNOMIALS, RATIONALS AND EXPONENTIALS TROPICAL ENTIRE FUNCTIONS ONE-DIMENSIONAL TROPICAL NEVANLINNA THEORY CLUNIE AND MOHON'KO TYPE THEOREMS TROPICAL HOLOMORPHIC

CURVES REPRESENTATIONS OF TROPICAL PERIODIC FUNCTIONS APPLICATIONS TO ULTRA-DISCRETE EQUATIONS APPENDICES: CLASSICAL NEVANLINNA AND CARTAN THEORIES INTRODUCTION TO ULTRA-DISCRETE PAINLEVE EQUATIONS SOME OPERATORS IN COMPLEX ANALYSIS READERSHIP: GRADUATE STUDENTS, POST-GRADUATES AND RESEARCHERS. KEY FEATURES: FIRST MONOGRAPH TYPE PRESENTATION IN THIS TOPIC SOME OF THE MATERIAL IS NEW IN CONTENTS, WHICH FOLLOWS IN THE PRESENTATION THE CONTRIBUTORS HAVE BEEN ACTIVE IN VALUE DISTRIBUTION THEORY, INCLUDING ITS TROPICAL VARIANT KEYWORDS: TROPICAL MATHEMATICS; VALUE DISTRIBUTION THEORY; ULTRA-DISCRETE EQUATIONS

PROBLEMS AND THEOREMS IN LINEAR ALGEBRA VIKTOR VASIL_EVICH PRASOLOV 1994-06-13 THERE ARE A NUMBER OF VERY GOOD BOOKS AVAILABLE ON LINEAR ALGEBRA. HOWEVER, NEW RESULTS IN LINEAR ALGEBRA APPEAR CONSTANTLY, AS DO NEW, SIMPLER, AND BETTER PROOFS OF OLD RESULTS. MANY OF THESE RESULTS AND PROOFS OBTAINED IN THE PAST THIRTY YEARS ARE ACCESSIBLE TO UNDERGRADUATE MATHEMATICS MAJORS, BUT ARE USUALLY IGNORED BY TEXTBOOKS. IN ADDITION, MORE THAN A FEW INTERESTING OLD RESULTS ARE NOT COVERED IN MANY BOOKS. IN THIS BOOK, THE AUTHOR PROVIDES THE BASICS OF LINEAR ALGEBRA, WITH AN EMPHASIS ON NEW RESULTS AND ON NONSTANDARD AND INTERESTING PROOFS.

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THE BOOK FEATURES ABOUT 230 PROBLEMS WITH COMPLETE SOLUTIONS. IT CAN SERVE AS A SUPPLEMENTARY TEXT FOR AN UNDERGRADUATE OR GRADUATE ALGEBRA COURSE.

LINEAR ALGEBRAIC GROUPS AND THEIR REPRESENTATIONS

RICHARD S. ELMAN 1993 THIS BOOK CONTAINS THE PROCEEDINGS OF THE CONFERENCE ON LINEAR ALGEBRAIC GROUPS AND THEIR REPRESENTATIONS, HELD AT UCLA IN MARCH 1992. THE CENTRAL THEME IS THE FUNDAMENTAL NATURE OF THIS SUBJECT AND ITS INTERACTION WITH A WIDE VARIETY OF ACTIVE AREAS IN MATHEMATICS AND PHYSICS. LINEAR ALGEBRAIC GROUPS AND THEIR REPRESENTATIONS INTERFACE WITH A BROAD RANGE OF AREAS THROUGH DIVERSE AVENUES--WITH ALGEBRAIC GEOMETRY THROUGH MODULI SPACES, WITH CLASSICAL INVARIANT THEORY THROUGH GROUP ACTIONS ON POLYNOMIAL RINGS, WITH ENUMERATIVE AND COMBINATORIAL GEOMETRY THROUGH FLAG MANIFOLDS, AND WITH THEORETICAL PHYSICS THROUGH KAC-MOODY ALGEBRAS AND QUANTUM GROUPS. COLLECTED HERE ARE BOTH SURVEYS AND ORIGINAL CONTRIBUTIONS BY EMINENT SPECIALISTS, REFLECTING CURRENT DEVELOPMENTS IN THE SUBJECT. THIS BOOK IS ONE OF THE FEW AVAILABLE SOURCES THAT BRINGS TOGETHER SUCH A WIDE VARIETY OF THEMES UNDER A SINGLE UNIFYING PERSPECTIVE.

VALUE DISTRIBUTION THEORY AND RELATED TOPICS

GRIGOR A. BARSEGHIAN 2006-05-02 THE NEVANLINNA THEORY OF VALUE DISTRIBUTION OF MEROMORPHIC FUNCTIONS, ONE OF

THE MILESTONES OF COMPLEX ANALYSIS DURING THE LAST CENTURY, WAS CITED TO EXTEND THE CLASSICAL RESULTS CONCERNING THE DISTRIBUTION OF ENTIRE FUNCTIONS TO THE MORE GENERAL SETTING OF MEROMORPHIC FUNCTIONS. LATER ON, A SIMILAR REASONING HAS BEEN APPLIED TO ALGEBROID FUNCTIONS, SUBHARMONIC FUNCTIONS AND MEROMORPHIC FUNCTIONS ON RIEMANN SURFACES AS WELL AS TO ANALYTIC FUNCTIONS OF SEVERAL COMPLEX VARIABLES, HOLOMORPHIC AND MEROMORPHIC MAPPINGS AND TO THE THEORY OF MINIMAL SURFACES. MOREOVER, SEVERAL APPLICATIONS OF THE THEORY HAVE BEEN EXPLOITED, INCLUDING COMPLEX DIFFERENTIAL AND FUNCTIONAL EQUATIONS, COMPLEX DYNAMICS AND DIOPHANTINE EQUATIONS. THE MAIN EMPHASIS OF THIS COLLECTION IS TO DIRECT ATTENTION TO A NUMBER OF RECENTLY DEVELOPED NOVEL IDEAS AND GENERALIZATIONS THAT RELATE TO THE DEVELOPMENT OF VALUE DISTRIBUTION THEORY AND ITS APPLICATIONS. IN PARTICULAR, WE MEAN A RECENT THEORY THAT REPLACES THE CONVENTIONAL CONSIDERATION OF COUNTING WITHIN A DISC BY AN ANALYSIS OF THEIR GEOMETRIC LOCATIONS. ANOTHER SUCH EXAMPLE IS PRESENTED BY THE GENERALIZATIONS OF THE SECOND MAIN THEOREM TO HIGHER DIMENSIONAL CASES BY USING THE JET THEORY. MOREOVER, SIMILAR IDEAS APPARENTLY MAY BE APPLIED TO SEVERAL RELATED AREAS AS WELL, SUCH AS TO PARTIAL DIFFERENTIAL EQUATIONS AND TO DIFFERENTIAL GEOMETRY. INDEED, MOST OF THESE

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APPLICATIONS GO BACK TO THE PROBLEM OF ANALYZING

ZEROS OF CERTAIN COMPLEX OR REAL FUNCTIONS, MEANING IN FACT TO INVESTIGATE LEVEL SETS OR LEVEL SURFACES.