

1. Record Nr.	UNINA9910972048903321
Titolo	Advances in mathematics research . Volume 8 / / Albert R. Baswell, editor
Pubbl/distr/stampa	Hauppauge, NY, : Nova Science Publishers Inc., c2009
ISBN	1-61209-811-8
Edizione	[1st ed.]
Descrizione fisica	1 online resource (382 p.)
Collana	Advances in mathematics research ; ; 8
Altri autori (Persone)	BaswellAlbert R
Disciplina	510.72
Soggetti	Mathematics Mathematics - Research
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Description based upon print version of record.
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Intro -- ADVANCES IN MATHEMATICSRESEARCH,VOLUME 8 -- ADVANCES IN MATHEMATICS RESEARCH, VOLUME 8 -- CONTENTS -- PREFACE -- THE METHOD OF CHARACTERISTICSFOR THE NUMERICAL SOLUTION OF HYPERBOLICDIFFERENTIAL EQUATIONS -- Abstract -- 1. Introduction -- 2. The Fractional Step Method Applied to the Vlasov Equation -- 2.1. The Fractional Step Method Applied to the Vlasov-Poisson System inOne Spatial Dimension -- 2.2. The Vlasov-Poisson System in Higher Phase-Space Dimensions:the Problem of the Formation of an Electric Field at a Plasma Edgein a Slab Geometry -- 2.3. Vlasov-Maxwell Equations for Laser-Plasma Interaction -- 3. Problems Involving the Interpolation along the CharacteristicCurves in Two Dimensions -- 3.1. Solution of the Guiding-Center or Euler Equations -- 3.2. The Vlasov-Poisson System in Higher Phase-Space Dimensions:Formation of an Electric Field at a Plasma edge in a CylindricalGeometry -- 3.3. One-Dimensional Fully Relativistic System for the Problem of Laser-Plasma Interaction -- 3.4. Numerical Solution of a Reduced Model for the Collisionless MagneticReconnection -- 4. Application of the Method of Characteristics to Fluid Equations -- 4.1. Numerical Solution of the Shallow Water Equations -- 4.2. Two-Dimensional Magnetohydrodynamic Flows -- 5. Conclusion -- Acknowledgments -- Appendix AThe Shift Operator Using the Cubic Spline -- Appendix BInterpolation Using the Cubic Spline -- Appendix CInterpolation Using the Cubic B-spline -- References -- NEGOTIATING

MATHEMATICS AND SCIENCE SCHOOLSUBJECT BOUNDARIES:THE ROLE OF AESTHETIC UNDERSTANDING -- Abstract -- Introduction -- Comparing Mathematics and Science as Secondary SchoolSubjects -- Relationship between Subject Culture and the Individual -- The Aesthetic in Education -- Methodology -- Research Methods -- Teacher Profiles -- Donna -- Pauline -- Rose. Looking for the Aesthetic in the Relationship between SubjectCulture and Pedagogy -- Compelling and Dramatic Nature of Understanding -- Aesthetic, Passion and the Subject -- Learning that Brings Unification or Coherence to Aspects of theWorld or the Subject -- Aesthetic, Coherence and the Subject -- Perceived Transformation of the Person and the World -- Rose's Transformation -- Pauline's Identity Crisis as She Negotiates Subject Boundaries -- Aesthetic, Identity and the Subject -- Insights and Implications -- Appreciation for the Aesthetic in the Teaching Act -- The Aesthetic in the Negotiation of Subject Boundaries -- Conclusion -- References -- THE MATHEMATICAL BASIS OF PERIODICITYIN ATOMIC AND MOLECULAR SPECTROSCOPY -- Introduction -- Combinatorial Periodicity in MolecularElectronic and Atomic Spectroscopy -- Combinatorial Periodicity in Molecular and NMR Spectroscopies -- Periodicity of Double Groups and Electronic States -- Acknowledgement -- References -- MATHEMATICAL MODELLING OF THERMOMECHANICALDESTRUCTION OF POLYPROPYLENE -- Abstract -- Conclusions -- References -- A DESIGN-BASED STUDY OF A COGNITIVE TOOLFOR TEACHING AND LEARNING THE PERIMETEROF CLOSED SHAPES -- Abstract -- Introduction -- Cognitive Inflexibility -- The Study -- The Theory-Driven Design of the Cognitive Tool -- The Empirical Study -- Evaluation Methods -- Results and Discussions -- Learning Outcome of Students from Pre-Test-Post-Test Instruments -- Feedback of Teachers from Interviews -- Feedback of Students from Questionnaire Survey -- Implications of the Empirical Study -- Conclusion -- References -- MODELING ASYMMETRIC CONSUMERBEHAVIOR AND DEMAND EQUATIONSFOR BRIDGING GAPS IN RETAILING1 -- Introduction -- Related Contributions -- Customer Value and Choice Probabilities -- Behavioral Asymmetry and Customer Choice -- Organizational Influences on Customer Values. Objectives and Design of Model -- Construct of Model -- Choice Variability and Demand Equation -- Consumer Choice for New Products -- Customer Value Enhancement -- Conclusion and Managerial Implications -- References -- HIGHER EDUCATION: FEDERAL SCIENCE, TECHNOLOGY, ENGINEERING, AND MATHEMATICSPROGRAMS AND RELATED TRENDS* -- Why This Study? -- Abbreviations -- Results in Brief -- Background -- More than 200 Federal Education Programs are Designed to Increase theNumbers of Students and Graduates or Improve Educational Programs inSTEM Fields, but Most Have Not Been Evaluated -- Federal Civilian Agencies Reported Sponsoring over 200 STEM EducationPrograms and Spending Billions in Fiscal Year 2004 -- Federal Agencies Reported Most STEM Programs Had Multiple Goals andWere Targeted to Multiple Groups -- Agency Officials Reported That Evaluations Were Completed or under Wayfor about Half of the Federal Programs -- A Subcommittee Was Established in 2003 to Help Coordinate STEMEducation Programs among Federal Agencies -- Numbers of Students, Graduates, and Employees in STEM Fields GenerallyIncreased, but Percentage Changes Varied -- Numbers of Students in STEM Fields Grew, but This Increase Varied byEducation Level and Student Characteristics -- Total Numbers of Graduates with STEM Degrees Increased, but NumbersDecreased in Some Fields, and Percentages of Minority Graduates at theMaster's and Doctoral Levels

Did Not Change -- STEM Employment Rose, but the Percentage of Women Remained About the Same and Minorities Continued to be Underrepresented -- University Officials and Others Cited Several Factors That Influence Decisions about Participation in STEM Fields and Suggested Ways to Encourage Greater Participation -- Teacher Quality and Mathematics and Science Preparation Were Cited as Key Factors Affecting Domestic Students' STEM Participation Decisions. Mentoring Cited as a Key Factor Affecting Women's and Minorities' STEM Participation Decisions -- International Students' STEM Participation Decisions Were Affected by Opportunities Outside the United States and the Visa Process -- Several Suggestions Were Made to Encourage More Participation in the STEM Fields -- Concluding Observations -- Agency Comments and Our Evaluation -- Appendix I: Objectives, Scope, and Methodology -- Objectives -- Scope and Methodology -- Survey -- Analyses of Student, Graduate, and Employee Data -- College and University Visits -- Reviews of Reports and Studies -- Interviews -- Appendix II: List of 207 Federal STEM Education Programs -- Appendix III: Federal STEM Education Programs Funded at 10 Million or More -- Appendix IV: Data on Students and Graduates in STEM Fields -- Appendix V: Confidence Intervals for Estimates of Students at the Bachelor's, Master's, and Doctoral Levels -- Appendix VI: Confidence Intervals for Estimates of STEM Employment by Gender, Race or Ethnicity, and Wages and Salaries -- Appendix VII: Comments from the Department of Commerce -- Appendix VIII: Comments from the Department of Health and Human Services -- Appendix IX: Comments from the National Science Foundation -- Appendix X: Comments from the National Science and Technology Council -- Acknowledgments -- Bibliography -- References -- Appendix I -- SCIENCE, TECHNOLOGY, ENGINEERING, AND MATHEMATICS (STEM) EDUCATION ISSUES AND LEGISLATIVE OPTIONS* -- Abstract -- Introduction -- STEM Education in the United States -- Elementary and Secondary Education -- Assessments of Math and Science Knowledge -- U.S. Students Compared to Students in Other Nations -- Math and Science Teacher Quality -- Postsecondary Education -- STEM Degrees Awarded in the United States -- U.S. Degrees Awarded to Foreign Students -- International Postsecondary Educational Attainment. International Comparisons in STEM Education -- Federal Programs that Promote STEM Education -- Government Accountability Office Study -- Description of Selected Federal STEM Programs -- NIH National Research Service Awards -- NSF Graduate Research Fellowships -- NSF Mathematics and Science Partnerships -- NSF Research Experiences for Undergraduates -- NASA Minority University Research Education Program -- ED Mathematics and Science Partnerships -- Proposals to Improve STEM Education -- Recommendations by the Scientific Community -- Legislation in the 109th Congress -- Secondary School Math and Science Preparation -- Recruiting and Retaining New STEM Teachers -- Upgrading the STEM Skills of Current Teachers -- Increase STEM Baccalaureate Degree Attainment -- Graduate Research and Early-Career Scholarship -- Federal Program Coordination -- ON COMPUTATIONAL MODELS FOR THE HYPERSPACE -- Abstract -- 1. Introduction -- 2. Background -- 3. The Weightable Quasi-metric Space $(B(CX), q_H)$ -- 4. Properties from Topological Algebra -- 5. Conclusion -- References -- PERIODIC-TYPE SOLUTIONS OF DIFFERENTIAL INCLUSIONS -- 1. Introduction -- 2. Preliminaries -- 3. Periodic-Type Maps, Multivalued Maps and Their Selections -- 3.1. Periodic Maps -- 3.2. Anti-periodic Maps -- 3.3. Quasi-periodic Maps -- 3.4. Almost-periodic Maps -- 3.5. Derivative-periodic Maps -- 4.

Primer of Periodic-Type Oscillations -- 4.1. Linear Systems with Constant Coefficients -- 4.2. Linear Systems with Time-Variable Coefficients -- 4.3. Nonlinear Scalar Equations -- 4.4. Nonlinear Planar Systems -- 4.5. Nonlinear Systems in R^n -- 5. General Theorems for Periodic-Type Solutions -- 5.1. Bounded Solutions -- 5.2. Periodic Solutions -- 5.3. Anti-periodic Solutions -- 5.4. Almost-periodic Solutions -- 5.5. Derivo-periodic Solutions -- 6. Concluding Remarks -- References -- INDEX.

Sommario/riassunto

'Advances in Mathematics Research' presents original research results on the leading edge of mathematics research. Each article has been carefully selected in an attempt to present substantial research results across a broad spectrum.
