Math Paper 1 September 2013 Memorandu

The Langlands Programme is one of the most important areas in modern pure mathematics. The importance of this volume lies in its potential to recast many aspects of the programme in an entirely new context. For example, the morphisms in the monomial category of a locally p-adic Lie group have a distributional description, due to Bruhat in his thesis. Admissible representations in the programme are often treated via convolution algebras of distributions and representations of Hecke algebras. The monomial embedding, introduced in this book, elegantly fits together these two uses of distribution theory. The author follows up this application by giving the monomial category treatment of the Bernstein Centre, classified by Deligne-Bernstein-Zelevinsky.This book gives a new categorical setting in which to approach well-known topics. Therefore, the context used to explain examples is often the more generally accessible case of representations of finite general linear groups. For example, Galois base-change and epsilon factors for locally p-adic Lie groups are illustrated by the analogous Shintani descent and Kondo-Gauss sums, respectively. General linear groups of local fields are emphasized. However, since the philosophy of this book is

essentially that of homotopy theory and algebraic topology, it includes a short appendix showing how the buildings of Bruhat-Tits, sufficient for the general linear group, may be generalised to the tom Dieck spaces (now known as the Baum-Connes spaces) when G is a locally p-adic Lie group.The purpose of this monograph is to describe a functorial embedding of the category of admissible k-representations of a locally profinite topological group G into the derived category of the additive category of the admissible k-monomial module category. Experts in the Langlands Programme may be interested to learn that when G is a locally p-adic Lie group, the monomial category is closely related to the category of topological modules over a sort of enlarged Hecke algebra with generators corresponding to characters on compact open modulo the centre subgroups of G. Having set up this functorial embedding, how the ingredients of the celebrated Langlands Programme adapt to the context of the derived monomial module category is examined. These include automorphic representations, epsilon factors and L-functions, modular forms, Weil-Deligne representations, Galois base change and Hecke operators.

This book constitutes the thoroughly refereed proceedings of the 24th International Conference on Computer Networks, CN 2017, held in Brunów, Poland, in June 2017. The 35 full papers presented were carefully reviewed and selected from 80

submissions. They are dealing with the topics computer networks; teleinformatics and telecommunications; new technologies; queueing theory; innovative applications.

The authors study the Cauchy problem for the sine-Gordon equation in the semiclassical limit with pure-impulse initial data of sufficient strength to generate both high-frequency rotational motion near the peak of the impulse profile and also high-frequency librational motion in the tails. They show that for small times independent of the semiclassical scaling parameter, both types of motion are accurately described by explicit formulae involving elliptic functions. These formulae demonstrate consistency with predictions of Whitham's formal modulation theory in both the hyperbolic (modulationally stable) and elliptic (modulationally unstable) cases.

The general theme of MEDICON 2013 is "Research and Development of Technology for Sustainable Healthcare". This decade is being characterized by the appearance and use of emergent technologies under development. This situation has produced a tremendous impact on Medicine and Biology from which it is expected an unparalleled evolution in these disciplines towards novel concept and practices. The consequence will be a significant improvement in health care and well-fare, i.e. the shift from a reactive medicine to a preventive medicine. This shift implies that the citizen will play

an important role in the healthcare delivery process, what requires a comprehensive and personalized assistance. In this context, society will meet emerging media, incorporated to all objects, capable of providing a seamless, adaptive, anticipatory, unobtrusive and pervasive assistance. The challenge will be to remove current barriers related to the lack of knowledge required to produce new opportunities for all the society, while new paradigms are created for this inclusive society to be socially and economically sustainable, and respectful with the environment. In this way, these proceedings focus on the convergence of biomedical engineering topics ranging from formalized theory through experimental science and technological development to practical clinical applications.

The aim of this paper is to analyze some of the relationships between oscillation theory for linear ordinary differential equations on the real line (shortly, ODE) and the geometry of complete Riemannian manifolds. With this motivation the authors prove some new results in both directions, ranging from oscillation and nonoscillation conditions for ODE's that improve on classical criteria, to estimates in the spectral theory of some geometric differential operator on Riemannian manifolds with related topological and geometric applications. To keep their investigation basically self-contained, the authors also collect some, more or less known,

material which often appears in the literature in various forms and for which they give, in some instances, new proofs according to their specific point of view.

The rapid development of new methods for immunological data collection – from multicolor flow cytometry, through single-cell imaging, to deep sequencing – presents us now, for the first time, with the ability to analyze and compare large amounts of immunological data in health, aging and disease. The exponential growth of these datasets, however, challenges the theoretical immunology community to develop methods for data organization and analysis. Furthermore, the need to test hypotheses regarding immune function, and generate predictions regarding the outcomes of medical interventions, necessitates the development of mathematical and computational models covering processes on multiple scales, from the genetic and molecular to the cellular and system scales. The last few decades have seen the development of methods for presentation and analysis of clonal repertoires (those of T and B lymphocytes) and phenotypic (surface-marker based) repertoires of all lymphocyte types, and for modeling the intricate network of molecular and cellular interactions within the immune systems. This e-Book, which has first appeared as a 'Frontiers in Immunology' research topic, provides a comprehensive, online, open access snapshot of the

current state of the art on immune system modeling and analysis.

The three volume set LNAI 9284, 9285, and 9286 constitutes the refereed proceedings of the European Conference on Machine Learning and Knowledge Discovery in Databases, ECML PKDD 2015, held in Porto, Portugal, in September 2015. The 131 papers presented in these proceedings were carefully reviewed and selected from a total of 483 submissions. These include 89 research papers, 11 industrial papers, 14 nectar papers, 17 demo papers. They were organized in topical sections named: classification, regression and supervised learning; clustering and unsupervised learning; data preprocessing; data streams and online learning; deep learning; distance and metric learning; large scale learning and big data; matrix and tensor analysis; pattern and sequence mining; preference learning and label ranking; probabilistic, statistical, and graphical approaches; rich data; and social and graphs. Part III is structured in industrial track, nectar track, and demo track.

Living at the beginning of the 21st century requires being numerate, because numerical abilities are not only essential for life prospects of individuals but also for economic interests of post-industrial knowledge societies. Thus, numerical development is at the core of both individual as well as societal interests. There is the notion that we are already

born with a very basic ability to deal with small numerosities. Yet, this often called "number sense" seems to be very restricted, approximate, and driven by perceptual constraints. During our numerical development in formal (e.g., school) but also informal contexts (e.g., family, street) we acquire culturally developed abstract symbol systems to represent exact numerosities – in particular number words and Arabic digits – refining our numerical capabilities. In recent years, numerical development has gained increasing research interest documented in a growing number of behavioural, neuro-scientific, educational, cross-cultural, and neuropsychological studies addressing this issue. Additionally, our understanding of how numerical competencies develop has also benefitted considerably from the advent of different neuro-imaging techniques allowing for an evaluation of developmental changes in the human brain. In sum, we are now starting to put together a more and more coherent picture of how numerical competencies develop and how this development is associated with neural changes as well. In the end, this knowledge might also lead to a better understanding of the reasons for atypical numerical development which often has grieve consequences for those who suffer from developmental dyscalculia or mathematics learning disabilities. Therefore, this Research Topic deals with all aspects of numerical development: findings

from behavioural performance to underlying neural
substrates, from cross-sectional to longitudinal
evaluations, from healthy to clinical populations. To
this end, we included empirical contributions using
different experimental methodologies, but also
theoretical contributions, review articles, or opinion
papers.
"An elegant and amusing account" of how gambling
has been reshaped by the application of science and
revealed the truth behind a lucky bet (Wall Street
Journal). For the past 500 years, gamblers-led by
mathematicians and scientists-have been trying to
figure out how to pull the rug out from under Lady
Luck. In The Perfect Bet, mathematician and award-
winning writer Adam Kucharski tells the astonishing
story of how the experts have succeeded,
revolutionizing mathematics and science in the
process. The house can seem unbeatable.
Kucharski shows us just why it isn't. Even better, he
demonstrates how the search for the perfect bet has
been crucial for the scientific pursuit of a better
world.
Papers on Smarandachely edge 2-labeling, Jelly fish
graph, Vertex graceful graphs, vertex graceful
labeling, caterpillar, actinia graphs, Smarandachely
vertex m-labeling, regions Smarandachely semirelib
M-graph, mean graph, mean labeling, etc.
Our everyday lives are practically unthinkable
without optimization. We constantly try to minimize

our effort and to maximize the reward or progress achieved. Many real-world and industrial problems arising in engineering, economics, medicine and other domains can be formulated as optimization tasks. This volume presents a comprehensive collection of extended contributions from the 2017 Workshop on Computational Optimization. Presenting recent advances in computational optimization, it addresses important concrete applications, e.g. the modeling of physical processes, wildfire modeling, modeling processes in chemical engineering, workforce planning, wireless access network topology, parameter settings for controlling various processes, berth allocation, identification of homogeneous domains, and quantum computing. The book shows how to develop algorithms for them based on new intelligent methods like evolutionary computations, ant colony optimization, constrain programming and others. How can markets help us adapt to the challenges of climate change? Editor Terry L. Anderson brings together this collection of essays featuring the work of nine leading policy analysts, who argue that market forces are just as important as government regulation in shaping climate policy—and should be at the heart of our response to helping societies adapt to climate change. Anderson notes in his introduction that most current climate policies such as the Paris Agreement require hard-to-enforce collective action

and focus on reducing or mitigating greenhouse gases rather than adapting to their negative effects. Adaptive actions can typically deliver much more, faster and more cheaply than any realistic climate policy. The authors tackle a range of issues: the hidden costs of renewable energy sources, the political obstacles surrounding climate change policy, insurance and financial instruments for pricing risk of exposure to the effects of climate change, and more. Reliance on emerging renewable energies and a carbon tax are not enough to prevent the effects of global warming, they argue. We must encourage more private action and market incentives to adapt to a rapidly changing climate. This easy-to-use classroom resource provides a series of lessons, templates, and exemplars for practical classroom application, and will help teachers understand the content standards and the mathematical practice standards in order to develop meaningful mathematics lessons. This book primarily focuses on teachers' procedural knowledge of standards implementation as they apply the information and resources presented in this book. Mathematical rigor in the classroom for students includes lessons that target conceptual knowledge, procedural knowledge, factual knowledge, meta-cognitive knowledge, and the application of this knowledge in context. It also includes opportunities for teachers to develop all three dimensions of rigor

as it applies to the Common Core.
Can today's city govern well if its citizens lack
modern technology? How important is access to
computers for lowering unemployment? What
infrastructure does a city have to build in order to
attract new business? In this new collection, Michael
A. Pagano curates engagement with such questions
by public intellectuals, stakeholders, academics,
policy analysts, and citizens. Each essay explores
issues related to the impact and opportunities
technology provides in government and citizenship,
health care, workforce development, service delivery
to citizens, and metropolitan growth. As the authors
show, rapidly emerging technologies and access to
such technologies shape the ways people and
institutions interact in the public sphere and private
marketplace. The direction of metropolitan growth
and development, in turn, depends on access to
appropriate technology scaled and informed by the
individual, household, and community needs of the
region. Contributors include Randy Blankenhorn,
Bénédicte Callan, Jane Fountain, Sandee Kastrul,
Karen Mossberger, Dan O'Neil, Michelle Russell,
Alfred Tatum, Stephanie Truchan, Darrel West, and
Howard Wial.
Introductory Statistics is designed for the one-
semester, introduction to statistics course and is
geared toward students majoring in fields other than
math or engineering. This text assumes students

have been exposed to intermediate algebra, and it focuses on the applications of statistical knowledge rather than the theory behind it. The foundation of this textbook is Collaborative Statistics, by Barbara Illowsky and Susan Dean. Additional topics, examples, and ample opportunities for practice have been added to each chapter. The development choices for this textbook were made with the guidance of many faculty members who are deeply involved in teaching this course. These choices led to innovations in art, terminology, and practical applications, all with a goal of increasing relevance and accessibility for students. We strove to make the discipline meaningful, so that students can draw from it a working knowledge that will enrich their future studies and help them make sense of the world around them. Coverage and Scope Chapter 1 Sampling and Data Chapter 2 Descriptive Statistics Chapter 3 Probability Topics Chapter 4 Discrete Random Variables Chapter 5 Continuous Random Variables Chapter 6 The Normal Distribution Chapter 7 The Central Limit Theorem Chapter 8 Confidence Intervals Chapter 9 Hypothesis Testing with One Sample Chapter 10 Hypothesis Testing with Two Samples Chapter 11 The Chi-Square Distribution Chapter 12 Linear Regression and Correlation Chapter 13 F Distribution and One-Way ANOVA Edited in collaboration with FoLLI, the Association of Logic, Language and Information this book

constitutes the refereed proceedings of the 21st Workshop on Logic, Language, Information and Communication, WoLLIC 2014, held in Valparaiso, Chile, in September 2014. The 15 contributed papers presented together with 6 invited lectures were carefully reviewed and selected from 29 submissions. The focus of the workshop was on the following subjects Inter-Disciplinary Research involving Formal Logic, Computing and Programming Theory, and Natural Language and Reasoning.

This edited book brings together for the first time an international collection of work focused on two important aspects of any young child's life – learning mathematics and starting primary or elementary school. The chapters take a variety of perspectives, and integrate these two components in sometimes explicit and sometimes more subtle ways. The key issues and themes explored in this book are: the mathematical and other strengths that all participants in the transition to school bring to this period of a child's life; the opportunities provided by transition to school for young children's mathematics learning; the importance of partnerships among adults, and among adults and children, for effective school transitions and mathematics learning and teaching; the critical impact of expectations on their mathematics learning as children start school; the importance of providing children with meaningful, challenging and relevant mathematical experiences throughout transition to school; the entitlement of children and educators to experience

assessment and instructional pedagogies that match the strengths of the learners and the teachers; the importance for the aspirations of children, families, communities, educators and educational organisations to be recognised as legitimate and key determinants of actions, experiences and successes in both transition to school and mathematics learning; and the belief that young children are powerful mathematics learners who can demonstrate this power as they start school. In each chapter, authors reflect on their work in the area of mathematics and transition to school, place that work within the overall context of research in these fields, predict the trajectory of this work in the future, and consider the implications of the work both theoretically and practically.

In two volumes, this new edition presents the state of the art in Multiple Criteria Decision Analysis (MCDA). Reflecting the explosive growth in the field seen during the last several years, the editors not only present surveys of the foundations of MCDA, but look as well at many new areas and new applications. Individual chapter authors are among the most prestigious names in MCDA research, and combined their chapters bring the field completely up to date. Part I of the book considers the history and current state of MCDA, with surveys that cover the early history of MCDA and an overview that discusses the "pre-theoretical" assumptions of MCDA. Part II then presents the foundations of MCDA, with individual chapters that provide a very exhaustive review of preference modeling, along with a chapter devoted to the axiomatic basis of

the different models that multiple criteria preferences. Part III looks at outranking methods, with three chapters that consider the ELECTRE methods, PROMETHEE methods, and a look at the rich literature of other outranking methods. Part IV, on Multiattribute Utility and Value Theories (MAUT), presents chapters on the fundamentals of this approach, the very well known UTA methods, the Analytic Hierarchy Process (AHP) and its more recent extension, the Analytic Network Process (ANP), as well as a chapter on MACBETH (Measuring Attractiveness by a Categorical Based Evaluation Technique). Part V looks at Non-Classical MCDA Approaches, with chapters on risk and uncertainty in MCDA, the decision rule approach to MCDA, the fuzzy integral approach, the verbal decision methods, and a tentative assessment of the role of fuzzy sets in decision analysis. Part VI, on Multiobjective Optimization, contains chapters on recent developments of vector and set optimization, the state of the art in continuous multiobjective programming, multiobjective combinatorial optimization, fuzzy multicriteria optimization, a review of the field of goal programming, interactive methods for solving multiobjective optimization problems, and relationships between MCDA and evolutionary multiobjective optimization (EMO). Part VII, on Applications, selects some of the most significant areas, including contributions of MCDA in finance, energy planning problems, telecommunication network planning and design, sustainable development, and portfolio analysis. Finally, Part VIII, on MCDM software, presents well known MCDA software packages.

The increasing demand of processing a higher number of applications and related data on computing platforms has resulted in reliance on multi-/many-core chips as they facilitate parallel processing. However, there is a desire for these platforms to be energy-efficient and reliable, and they need to perform secure computations for the interest of the whole community. This book provides perspectives on the aforementioned aspects from leading researchers in terms of state-of-the-art contributions and upcoming trends. This book addresses the broad multi-disciplinary topic of robotics, and presents the basic techniques for motion and operation planning in robotics systems. Gathering contributions from experts in diverse and wide ranging fields, it offers an overview of the most recent and cutting-edge practical applications of these methodologies. It covers both theoretical and practical approaches, and elucidates the transition from theory to implementation. An extensive analysis is provided, including humanoids, manipulators, aerial robots and ground mobile robots. 'Motion and Operation Planning of Robotic Systems' addresses the following topics: *The theoretical background of robotics. *Application of motion planning techniques to manipulators, such as serial and parallel manipulators. *Mobile robots planning, including robotic applications related to aerial robots, large scale robots and traditional wheeled robots. *Motion planning for humanoid robots. An invaluable reference text for graduate students and researchers in robotics, this book is also intended for researchers studying robotics control design, user interfaces, modelling, simulation, sensors,

humanoid robotics.

The International J. Mathematical Combinatorics is a fully refereed international journal, sponsored by the MADIS of Chinese Academy of Sciences and published in USA quarterly, which publishes original research papers and survey articles in all aspects of mathematical combinatorics, Smarandache multi-spaces, Smarandache geometries, non-Euclidean geometry, topology and their applications to other sciences.

The two-volume set LNCS 10777 and 10778 constitutes revised selected papers from the 12th International Conference on Parallel Processing and Applied Mathematics, PPAM 2017, held in Lublin, Poland, in September 2017. The 49 regular papers presented in this volume were selected from 98 submissions. For the workshops and special sessions, that were held as integral parts of the PPAM 2017 conference, a total of 51 papers was accepted from 75 submissions. The papers were organized in topical sections named as follows: Part I: numerical algorithms and parallel scientific computing; particle methods in simulations; task-based paradigm of parallel computing; GPU computing; parallel non-numerical algorithms; performance evaluation of parallel algorithms and applications; environments and frameworks for parallel/distributed/cloud computing; applications of parallel computing; soft computing with applications; and special session on parallel matrix factorizations. Part II: workshop on models, algorithms and methodologies for hybrid parallelism in new HPC systems; workshop power and energy aspects of computations (PEAC 2017); workshop on scheduling for

parallel computing (SPC 2017); workshop on language-based parallel programming models (WLPP 2017); workshop on PGAS programming; minisymposium on HPC applications in physical sciences; minisymposium on high performance computing interval methods; workshop on complex collective systems.

Educational Psychology, Second Edition offers a comprehensive overview of how key advances in social, developmental and cognitive psychology impact upon the role of educational psychologists working today. Written by leading researchers, the book also explores controversies and dilemmas in both research and practice, providing students with a balanced and cutting-edge introduction to both the field and the profession. Fully revised throughout, the new edition is written to encourage students to integrate their understanding of core psychological disciplines, as well as to consider what 'evidence-based practice' really means.

Organized into two broad sections related to learning and behaviour, the book features a selection of vignettes from educational psychologists working in a range of contexts, as well as tasks and scenarios to support a problem-orientated approach to study. By integrating both research and everyday practice, the book is unique in engaging a critical appreciation of both the possibilities and limitations of educational psychology. It is the ideal book for any student wishing to engage with this important and evolving field of study.

The Leading Edge of Early Childhood Education aims to support the effort to simultaneously scale up and improve the quality of early childhood education by

bringing together relevant insights from emerging research to provide guidance for this critical, fledgling field. It reflects the growing recognition that early childhood experiences have a powerful effect on children's later academic achievement and long-term life outcomes. Editors Nonie K. Lesaux and Stephanie M. Jones bring together an impressive array of scholarly contributors. Topics include: · creating learning environments that support children's cognitive and emotional development; · identifying and addressing early risk factors; · using data to guide educators' practice; and · capitalizing on the use of technology. Recent years have seen a surge of local, state, and national initiatives aimed at expanding and improving early childhood initiatives, particularly regarding access to preK programs. The Leading Edge of Early Childhood Education promises to be a valuable resource for those charged with enacting the next level of work in this critical area.

This volume contains selected expository lectures delivered at the Maurice Auslander Distinguished Lectures and International Conference, held May 1–6, 2014, at the Woods Hole Oceanographic Institute, Woods Hole, MA. Several significant developments of the last decade in representation theory of finite-dimensional algebras are related to combinatorics. Three of the five lectures in this volume deal, respectively, with the Catalan combinatorics, the combinatorics of Gelfand-Zetlin polytopes, and the combinatorics of tilting modules.

The remaining papers present history and recent advances in the study of left orders in left Artinian rings and a survey on invariant theory of Artin-Schelter regular algebras.

Who's afraid of for-profit education? Those who work in non-profit or government owned and operated schools. Many parents and other stakeholders have been made fearful by this education establishment. What's more important to humans: nutrition or education? Nutrition is more important because it is the prerequisite for other human activities, including education. What organizations provide food and who pays for the food? Food is provided by for-profit farmers, for-profit processors, for-profit wholesalers, and for-profit retailers. Most food is purchased with the consumers' own money, but a significant amount is purchased by low-income individuals using food stamps. Why can't education be provided similarly using education stamps? We trust for-profit enterprises to provide our food. Why can't we trust for-profit enterprises to provide K-12 education? Fearmongers have frightened us and made us into gullible compliant socialists who despise commercial activities in education. Go to the supermarket and ponder its marvelous array of foods and then contemplate how a for-profit K-12 education sector would please and amaze its customers.

Given a prime , a group is called residually if the

intersection of its -power index normal subgroups is trivial. A group is called virtually residually if it has a finite index subgroup which is residually . It is well-known that finitely generated linear groups over fields of characteristic zero are virtually residually for all but finitely many . In particular, fundamental groups of hyperbolic -manifolds are virtually residually . It is also well-known that fundamental groups of -manifolds are residually finite. In this paper the authors prove a common generalization of these results: every -manifold group is virtually residually for all but finitely many . This gives evidence for the conjecture (Thurston) that fundamental groups of -manifolds are linear groups. This edited collection contends that if women are to enter into leadership positions at equal levels with their male colleagues, then sexism in all its forms must be acknowledged, attended to, and actively addressed. This interdisciplinary collection—Surviving Sexism in Academia: Strategies for Feminist Leadership—is part storytelling, part autoethnography, part action plan. The chapters document and analyze everyday sexism in the academy and offer up strategies for survival, ultimately 'lifting the veil" from the good old boys/business-as-usual culture that continues to pervade academia in both visible and less-visible forms, forms that can stifle even the most ambitious women in their careers.

In Evidence, Politics, and Education Policy, political scientists Lorraine M. McDonnell and M. Stephen Weatherford provide an original analysis of evidence use in education policymaking to help scholars and advocates shape policy more effectively. The book shows how multiple types of evidence are combined as elected officials and their staffs work with researchers, advocates, policy entrepreneurs, and intermediary organizations to develop, create, and implement education policies. Evidence, Politics, and Education Policy offers an in-depth understanding of the political environment in which evidence is solicited and used. Two key case studies inform the book's findings. The primary case—a major, multimethod study—examines the development and early implementation of the Common Core State Standards at the national level and in four states: California, Indiana, Massachusetts, and Tennessee. A comparative case analyzes the evidence used in Congressional hearings over the twenty-year history of the Children's Health Insurance Program. Together, the two cases illustrate the conditions under which different types of evidence are used and, in particular, how federalism, the complexity of the policy problem, and the policy's maturity shape evidence use. McDonnell and Weatherford focus on three leverage points for strengthening the use of research evidence in education policy: integrating research findings with value-based policy ideas;

designing policies with incentives for research use built into their rules and organizational structures; and training policy analysts to promote the use of research in policymaking venues.

This book constitutes the refereed proceedings of the 10th International Conference on Combinatorics on Words, WORDS 2015, held in Kiel, Germany, in September 2015 under the auspices of the EATCS. The 14 revised full papers presented were carefully reviewed and selected from 22 submissions. The main object in the contributions are words, finite or infinite sequences of symbols over a finite alphabet. The papers reflect both theoretical contributions related to combinatorial, algebraic, and algorithmic aspects of words, as well as to contributions presenting applications of the theory of words in other field of computer science, linguistics, biology, bioinformatics, or physics.

Help all students become high-achieving mathematics learners. Gain a strong understanding of mathematics culture, and learn necessary best practices to fully align curriculum and instruction with the CCSS for mathematics. You'll explore the factors that have traditionally limited mathematics achievement for students and discover practical strategies for creating an environment that supports mathematics learning and instruction.

Searching for small gaps between consecutive primes is one way to approach the twin primes

conjecture, one of the most celebrated unsolved problems in number theory. This book documents the remarkable developments of recent decades, whereby an upper bound on the known gap length between infinite numbers of consecutive primes has been reduced to a tractable finite size. The text is both introductory and complete: the detailed way in which results are proved is fully set out and plenty of background material is included. The reader journeys from selected historical theorems to the latest best result, exploring the contributions of a vast array of mathematicians, including Bombieri, Goldston, Motohashi, Pintz, Yildirim, Zhang, Maynard, Tao and Polymath8. The book is supported by a linked and freely-available package of computer programs. The material is suitable for graduate students and of interest to any mathematician curious about recent breakthroughs in the field.

The book comprises papers presented at the 7th International Conference on University Learning and Teaching (InCULT) 2014, which was hosted by the Asian Centre for Research on University Learning and Teaching (ACRULeT) located at the Faculty of Education, Universiti Teknologi MARA, Shah Alam, Malaysia. It was co-hosted by the University of Hertfordshire, UK; the University of South Australia; the University of Ohio, USA; Taylor's University, Malaysia and the Training Academy for Higher

Education (AKEPT), Ministry of Education, Malaysia. A total of 165 papers were presented by speakers from around the world based on the theme "Educate to Innovate in the 21st Century." The papers in this timely book cover the latest developments, issues and concerns in the field of teaching and learning and provide a valuable reference resource on university teaching and learning for lecturers, educators, researchers and policy makers. Women of Color in STEM: Navigating the Workforce is an opportunity for making public the life stories of women of color who have persevered in STEM workplace settings. The authors used various critical theories to situate and make visible the lives of women of color in such disciplines and workplace contexts like mathematics, science, engineering, NASA, academia, government agencies, and others. They skillfully centered women and their experiences at the intersection of their identity dimensions of race, class, gender, and their respective discipline. While the disciplines and career contexts vary, the oppression, alienation, and social inequities were common realities for all. Despite the challenges, the women were resilient and persevered with tenacity, a strong sense of self as a person of color, and reliance on family, community, mentors, and spirituality. While we celebrated the successes, it is critical that organizational leaders, whether in education or other workplace settings, draw from

narratives and counter?narratives of these women to improve the organizational climate where individuals can thrive, despite their racial, class and gender identity. This book will assist educational communities, professional communities, and families to understand their roles and responsibilities in increasing the number of women of color in STEM. Longlisted for the National Book Award New York Times Bestseller A former Wall Street quant sounds an alarm on the mathematical models that pervade modern life -- and threaten to rip apart our social fabric We live in the age of the algorithm. Increasingly, the decisions that affect our lives--where we go to school, whether we get a car loan, how much we pay for health insurance--are being made not by humans, but by mathematical models. In theory, this should lead to greater fairness: Everyone is judged according to the same rules, and bias is eliminated. But as Cathy O'Neil reveals in this urgent and necessary book, the opposite is true. The models being used today are opaque, unregulated, and uncontestable, even when they're wrong. Most troubling, they reinforce discrimination: If a poor student can't get a loan because a lending model deems him too risky (by virtue of his zip code), he's then cut off from the kind of education that could pull him out of poverty, and a vicious spiral ensues. Models are propping up the lucky and punishing the downtrodden, creating a

"toxic cocktail for democracy." Welcome to the dark side of Big Data. Tracing the arc of a person's life, O'Neil exposes the black box models that shape our future, both as individuals and as a society. These "weapons of math destruction" score teachers and students, sort r sum s, grant (or deny) loans, evaluate workers, target voters, set parole, and monitor our health. O'Neil calls on modelers to take more responsibility for their algorithms and on policy makers to regulate their use. But in the end, it's up to us to become more savvy about the models that govern our lives. This important book empowers us to ask the tough questions, uncover the truth, and demand change. -- Longlist for National Book Award (Non-Fiction) -- Goodreads, semi-finalist for the 2016 Goodreads Choice Awards (Science and Technology) -- Kirkus, Best Books of 2016 -- New York Times, 100 Notable Books of 2016 (Non-Fiction) -- The Guardian, Best Books of 2016 -- WBUR's "On Point," Best Books of 2016: Staff Picks -- Boston Globe, Best Books of 2016, Non-Fiction To succeed in science and tech fields today, girls don't have to change who they are. A girl who combines her natural talents, interests, and dreams with STEM skills has a greater shot at a career she loves and a salary she deserves. The authors present compelling research in a conversational, accessible style and provide specific advice and takeaways for each stage of schooling from

elementary school through college, followed by
comprehensive STEM resources. This isn't a book
about raising competitive, test-acing girls in lab
coats; this is about raising happy, confident girls who
realize the world of opportunities before them.
For M a closed manifold or the Euclidean space
$\mathbb{R}^n$, the authors present a detailed proof
of regularity properties of the composition of
H^s-regular diffeomorphisms of M for $s
>\frac{1}{2}\dim M+1$.
This book is a printed edition of the Special Issue
"Decomposability of Tensors" that was published in
Mathematics
This survey provides a brief and selective overview
of research in the philosophy of mathematics
education. It asks what makes up the philosophy of
mathematics education, what it means, what
questions it asks and answers, and what is its overall
importance and use? It provides overviews of critical
mathematics education, and the most relevant
modern movements in the philosophy of
mathematics. A case study is provided of an
emerging research tradition in one country. This is
the Hermeneutic strand of research in the philosophy
of mathematics education in Brazil. This illustrates
one orientation towards research inquiry in the
philosophy of mathematics education. It is part of a
broader practice of 'philosophical archaeology': the
uncovering of hidden assumptions and buried

ideologies within the concepts and methods of research and practice in mathematics education. An extensive bibliography is also included.

Twenty-first-century US policymakers face a great challenge: How can federal government help more people achieve the American dream? Specifically, how can we provide greater opportunities for less-prosperous individuals, enabling them to succeed through hard work, on their merits, and take increased responsibility for their lives? Lewis D. Solomon sees this as the challenge of our time. He seeks to thread the fine public policy needle between social democratic efforts to perfect the world and those who negatively view public sector programs. Based on the premise that capitalism is not inherently unjust and defective, and American capitalism's structural features do not inexorability thwart opportunity, Building an Opportunity Society offers the possibility of more limited, carefully structured, cost-effective, empirically verified federal policies and programs. Solomon first provides the background and context of many existing domestic challenges and problems that the current and proposed federal policies and programs seek to address. He then analyses the federal safety net that keeps Americans from poverty and helps reduce income inequality. Finally, he presents a lifecycle analysis of current federal policies and programs, preventive and remedial, designed as part of the

Entitlement State, but if restructured could facilitate the building of an Opportunity Society. Solomon challenges policymakers to take a fresh look at how best to achieve society's goals for all citizens.