A Demodulation Algorithm For Time Phase Modulation Based

Technological advancements in recent years have enabled the development of tiny, cheap disposable and self contained battery powered computers, known as sensor nodes or "motes", which can accept input from an attached sensor, process this input and transmit the results wirelessly to some interested device(s). When a number of these nodes work together, conceivably up to hundreds of thousands, a Wireless Sensor Network (WSN) is formed. Research in the area of wireless sensor networks has become increasingly wid- pread in recent years, partly due to their wide range of potential uses and also partly due to the fact that the technology enabling such networks is now widely available from many di?erent suppliers, such as: Crossbow, MoteIV, Intel and SUN (java based motes). These wireless sensor networks have the potential to allow a level of integration between computers and the physical world that, to date, has been virtually impos- ble. The uses for such networks is almost limitless and include such diverse app- cations as a counter sniper system for urban warfare [1] tracking the path of a forest re [2], determining the structural stability of a building after an earthquake [3], or tracking people or objects inside a building [4], etc.

Data Analysis Methods in Physical Oceanography is a practical reference guide to established and modern data analysis techniques in earth and ocean sciences. This second and revised edition is even more comprehensive with numerous updates, and an additional appendix on 'Convolution and Fourier transforms'. Intended for both students and established scientists, the five major chapters of the book cover data acquisition and recording, data processing and presentation, statistical methods and error handling, analysis of spatial data fields, and time series analysis methods. Chapter 5 on time series analysis is a book in itself, spanning a wide diversity of topics from stochastic processes and stationarity, coherence functions, Fourier analysis, tidal harmonic analysis, spectral and cross-spectral analysis, wavelet and other related methods for processing nonstationary data series, digital filters, and fractals. The seven appendices include unit conversions, approximation methods and nondimensional numbers used in geophysical fluid dynamics, presentations on convolution, statistical terminology, and distribution functions, and a number of important statistical tables. Twenty pages are devoted to references. Featuring: • An in-depth presentation of modern techniques for the analysis of temporal and spatial data sets collected in oceanography, geophysics, and other disciplines in earth and ocean sciences. • A detailed overview of oceanographic instrumentation and sensors - old and new - used to collect oceanographic data. • 7 appendices especially applicable to earth and ocean sciences ranging from conversion of units, through statistical tables, to terminology and non-dimensional parameters. In praise of the first edition: "(...)This is a very practical guide to the various statistical analysis methods used for obtaining information from geophysical data, with particular reference to oceanography(...) The book provides both a text for advanced students of the geophysical sciences and a useful reference volume for researchers." Aslib Book Guide Vol 63, No. 9, 1998 "(...)This is an excellent book that I recommend highly and will definitely use for my own research and teaching." EOS Transactions, D.A. Jay, 1999 "(...)In summary, this book is the most comprehensive and practical source of information on data analysis methods available to the physical oceanographer. The reader gets the benefit of extremely broad coverage and an excellent set of examples drawn from geographical observations." Oceanography, Vol. 12, No. 3, A. Plueddemann, 1999 "(...)Data Analysis Methods in Physical Oceanography is highly recommended for a wide range of readers, from the relative novice to the experienced researcher. It would be appropriate for academic and special libraries." E-Streams, Vol. 2, No. 8, P. Mofjelf, August 1999

The area of personal and wireless communications is a burgeoning field. Technology advances and new frequency allocations for personal communication services (PCS) are creating numerous business and technical opportunities. It is becoming clear that an essential requirement for exploiting opportunities is the ability to track the dramatic changes in wireless technology, which is a principal aim of this book. Wireless Personal Communications: Research Developments places particular emphasis on the areas of signal processing, propagation and spread-spectrum, and emerging communication systems. This book contains new results on adaptive antennas for capacity improvements in wireless communication systems, as well as state-of-the-art information on the latest technical developments. Also included are several chapters which discuss the impact of defense conversion on the wireless industry, and related competitive issues. The six parts of the book each focus on a distinct issue in wireless communications. Part I contains several tutorial chapters on key areas in wireless communications. The first chapter is on radio wave propagation for emerging wireless personal communication systems. Chapter two contains a comprehensive study of emerging DSP-based interference rejection techniques for single channel (antenna) systems. Chapter three deals with spread spectrum wireless communications, explaining the concept of spread spectrum, modeling techniques for spread spectrum, and current applications and research issues for spread spectrum systems. Part II focuses on digital signal processing and spread spectrum, two means of creating interference and multipath robust communications. Part III concerns propagation aspects of wireless communications. Part IV discusses the performance of emerging wireless systems. Part V describes the opportunities and pitfalls of defense conversion from the perspective of several U.S. defense firms that have successfully made the transition to commercial wireless. The final section discusses a number of competitive issues regarding personal communication services.

Comprehensive Biomedical Physics is a new reference work that provides the first point of entry to the literature for all scientists interested in biomedical physics. It is of particularly use for graduate and postgraduate students in the areas of medical biophysics. This Work is indispensable to all serious readers in this interdisciplinary area where physics is applied in medicine and biology. Written by leading scientists who have evaluated and summarized the most important methods, principles, technologies and data within the field, Comprehensive Biomedical Physics is a vital addition to the reference libraries of those working within the areas of medical imaging, radiation sources, detectors, biology, safety and therapy, physiology, and pharmacology as well as in the treatment of different clinical conditions and bioinformatics. This Work will be valuable to students working in all aspect of medical biophysics, including medical imaging and biomedical radiation science and therapy, physiology, pharmacology and treatment of clinical conditions and bioinformatics. The most comprehensive work on biomedical physics ever published Covers one of the fastest growing areas in the physical sciences, including interdisciplinary areas ranging from advanced nuclear physics and quantum mechanics through mathematics to molecular biology and medicine Contains 1800 illustrations, all in full color

The work done in chaotic modeling and simulation during the last decades has changed our views of the world around us and has introduced new scientific tools, methods and techniques. Advanced topics of these achievements are included in this volume on Chaos Theory which focuses on Chaotic Modeling, Simulation and Applications of the nonlinear phenomena. This volume includes the best papers presented in the 3rd International Conference on CHAOS. This interdisciplinary conference attracted people from many scientific fields dealing with chaos, nonlinear dynamics, fractals and the works presented and the papers included here are of particular interest that could provide a broad understanding of chaos in its various forms.The chapters relate to many fields of chaos including Dynamical and Nonlinear Systems, Attractors and Fractals, Hydro-Fluid Dynamics and Mechanics, Chaos in Meteorology and Cosmology, Chaos in Biology and Genetics, Chaotic Control, Chaos in Economy and Markets, and Computer Composition and Chaotic Simulations, including related applications.

This book highlights the latest advances and trends in advanced signal processing (such as wavelet theory, time-frequency analysis, empirical mode decomposition, compressive sensing and sparse representation, and stochastic resonance) for structural health monitoring (SHM). Its primary focus is on the utilization of advanced signal processing techniques to help monitor the health status of critical structures and machines encountered in our daily lives: wind turbines, gas turbines, machine tools, etc. As such, it offers a key reference guide for researchers, graduate students, and industry professionals

who work in the field of SHM.

Speech sound production is one of the most complex human activities: it is also one of the least well understood. This is perhaps not altogether surprising as many of the complex neurological and physiological processes involved in the generation and execution of a speech utterance remain relatively inaccessible to direct investigation, and must be inferred from careful scrutiny of the output of the system -from details of the movements of the speech organs themselves and the acoustic consequences of such movements. Such investigation of the speech output have received considerable impetus during the last decade from major technological advancements in computer science and biological transducing, making it possible now to obtain large quantities of quantative data on many aspects of speech articulation and acoustics relatively easily. Keeping pace with these advancements in laboratory techniques have been developments in theoretical modelling of the speech production process. There are now a wide variety of different models available, reflecting the different disciplines involved -linguistics, speech science and technology, engineering and acoustics. The time seems ripe to attempt a synthesis of these different models and theories and thus provide a common forum for discussion of the complex problem of speech production. Such an activity would seem particularly timely also for those colleagues in speech technology seeking better, more accurate phonetic models as components in their speech synthesis and automatic speech recognition systems.

This book explains physical principles, unique benefits, broad categories, implementation aspects, and performance criteria of distributed optical fiber sensors (DOFS). For each kind of sensor, the book highlights industrial applications, which range from oil and gas production to power line monitoring, plant and process engineering, environmental monitoring, industrial fire and leakage detection, and so on. The text also includes a discussion of such key areas as backscattering, launched power limitations, and receiver sensitivity, as well as a concise historical account of the field's development.

'Proceedings of the 26th Conference of Spacecraft TT&C Technology in China' collects selected papers from the 26th Conference of Spacecraft TT&C Technology in China held in Nanjing on October 16-19, 2012. The book features state-of-the-art studies on spacecraft TT&C in China with the theme of "Shared and Flexible TT&C Systems". The selected works can help promote the technologies in standardization, informatization, communication networks and intelligence. Researchers and engineers in the field of aerospace engineering and communication engineering can benefit from the book. SHEN Rongjun is the Academician of Chinese Academy of Engineering; QIAN Weiping is the Director General of Beijing Institute of Tracking and Telecommunications Technology.

M-health can be defined as the 'emerging mobile communications and network technologies for healthcare systems.' This book paves the path toward understanding the future of m-health technologies and services and also introducing the impact of mobility on existing e-health and commercial telemedical systems. M-Health: Emerging Mobile Health Systems presents a new and forward-looking source of information that explores the present and future trends in the applications of current and emerging wireless communication and network technologies for different healthcare scenaria. It also provides a discovery path on the synergies between the 2.5G and 3G systems and other relevant computing and information technologies and how they prescribe the way for the next generation of m-health services. The book contains 47 chapters, arranged in five thematic sections: Introduction to Mobile M-health Systems, Smart Mobile Applications for Health Professionals, Signal, Image, and Video Compression for M-health Applications, Emergency Health Care Systems and Services, Echography Systems and Services, and Remote and Home Monitoring. This book is intended for all those working in the field of information technologies in biomedicine, as well as for people working in future applications of wireless communications and wireless telemedical systems. It provides different levels of material to researchers, computing engineers, and medical practitioners interested in emerging e-health systems. This book will be a useful reference for all the readers in this important and growing field of research, and will contribute to the roadmap of future m-health systems and improve the development of effective healthcare delivery systems.

21 years ago it was a joint idea with Hans Rottenkolber to organize a workshop dedicated to the discussion of the latest results in the automatic processing of fringe patterns. This idea was promoted by the insight that automatic and high precision phase measurement techniques will play a key role in all future industrial and scientific applications of optical metrology. A couple of months later more than 50 specialists from East and West met in East Berlin, the capital of the former GDR, to spend 3 days with the discussion of new principles of fringe processing. In the stimulating atmoshere the idea was born to repeat the workshop and to organize the meeting in an olympic schedule. And thus meanwhile 20 years have been passed and we have today Fringe number six. However, such a workshop takes place in a dynamic environment. Therefore the main topics of the previous events were always adapted to the most interesting subjects of the new period. In 1993 the workshop took place in Bremen and was dedicated to new principles of optical shape measurement, setup calibration, phase unwrapping and nondestructive testing, while in 1997 new approaches in multi-sensor metrology, active measurement strategies and hybrid processing technologies played a central role. 2001, the first meeting in the 21st century, was focused to optical methods for micromeasurements, hybrid measurement technologies and new sensor solutions for industrial inspection.

Volume is indexed by Thomson Reuters CPCI-S (WoS). The papers of this 4 volumes set on "Sensors, Measurement and Intelligent Materials" are grouped as follows: Chapter 1: Intelligent Materials and Structures; Chapter 2: Sensors; Chapter 3: Techniques for Measurement, Detection and Monitoring; Chapter 4: Data Acquisition, Data Mining and Data Processing; Chapter 5: Automation and Control. Technologies and Engineering; Chapter 6: Intelligent System; Chapter 7: Mechatronics; Chapter 8: Microelectronics, Electronics and Electrical. Circuits and Devices; Chapter 9: Network Engineering and Communication Technology; Chapter 10: Applied Computing and Information Technologies; Chapter 11: Materials and Processing Technologies; Chapter 12: Applied Mechanics in General Mechanical Engineering and Construction.

This book presents the combined proceedings of the 8th International Conference on Computer Science and its Applications (CSA-16) and the 11st International Conference on

Ubiquitous Information Technologies and Applications (CUTE 2016), both held in Bangkok, Thailand, December 19 - 21, 2016. The aim of these two meetings was to promote discussion and interaction among academics, researchers and professionals in the field of ubiquitous computing technologies. These proceedings reflect the state-of-the-art in the development of computational methods, involving theory, algorithm, numerical simulation, error and uncertainty analysis and novel application of new processing techniques in engineering, science, and other disciplines related to ubiquitous computing.

Heuristic Search is an important sub-discipline of optimization theory and finds applications in a vast variety of fields, including life science and engineering. Search methods have been useful in solving tough engineering-oriented problems that either could not be solved any other way or solutions take a very long time to be computed. This book explores a variety of applications for search methods and techniques in different fields of electrical engineering. By organizing relevant results and applications, this book will serve as a useful resource for students, researchers and practitioners to further exploit the potential of search methods in solving hard optimization problems that arise in advanced engineering technologies, such as image and video processing issues, detection and resource allocation in telecommunication systems, security and harmonic reduction in power generation systems, as well as redundancy optimization problem and search-fuzzy learning mechanisms in industrial applications.

In recent years, a wealth of research has emerged addressing various aspects of mobile communications signal processing. New applications and services are continually arising, and future mobile communications offer new opportunities and exciting challenges for signal processing. The Signal Processing for Mobile Communications Handbook provi

This book is the first in aseries on novellow power design architectures, methods and design practices. It results from of a large European project started in 1997, whose goal is to promote the further development and the faster and wider industrial use of advanced design methods for reducing the power consumption of electronic systems. Low power design became crucial with the wide spread of portable information and cornrnunication terminals, where a small battery has to last for a long period. High performance electronics, in addition, suffers from a permanent increase of the dissipated power per square millimetre of silicon, due to the increasing eIock-rates, which causes cooling and reliability problems or otherwise limits the performance. The European Union's Information Technologies Programme 'Esprit' did there fore launch a 'Pilot action for Low Power Design' , wh ich eventually grew to 19 R&D projects and one coordination project, with an overall budget of 14 million Euro. It is meanwhile known as European Low Power Initiative for Electronic System Design (ESD-LPD) and will be completed by the end of 2001. It involves 30 major Euro pean companies and 20 well-known institutes. The R&D projects aims to develop or demonstrate new design methods for power reduction, while the coordination project takes care that the methods, experiences and results are properly documented and pub licised.

These Proceedings present selected research papers from CSNC2016, held during 18th-20th May in Changsha, China. The theme of CSNC2016 is Smart Sensing, Smart Perception. These papers discuss the technologies and applications of the Global Navigation Satellite System (GNSS), and the latest progress made in the China BeiDou System (BDS) especially. They are divided into 12 topics to match the corresponding sessions in CSNC2016, which broadly covered key topics in GNSS. Readers can learn about the BDS and keep abreast of the latest advances in GNSS techniques and applications.

"What are the recent developments in the field of Metrology?" International leading experts answer this question providing both state of the art presentation and a road map to the future of measurement science. The book is organized in six sections according to the areas of expertise, namely: Introduction; Length, Distance and Surface; Voltage, Current and Frequency; Optics; Time and Relativity; Biology and Medicine. Theoretical basis and applications are explained in accurate and comprehensive manner, providing a valuable reference to researchers and professionals.

Smart Antennas—State of the Art brings together the broad expertise of 41 European experts in smart antennas. They provide a comprehensive review and an extensive analysis of the recent progress and new results generated during the last years in almost all fields of smart antennas and MIMO (multiple-input multiple-output) transmission. The following represents a summarized table of content.Receiver: space-time processing, antenna combining, reduced rank processing, robust beamforming, subspace methods, synchronization, equalization, multiuser detection, iterative methods Channel: propagation, measurements and sounding, modelling, channel estimation, direction-of-arrival estimation, subscriber location estimation Transmitter: space-time block coding, channel side information, unified design of linear transceivers, ill-conditioned channels, MIMO-MAC strategies Network Theory: channel capacity, network capacity, multihop networks Technology: antenna design, transceivers, demonstrators and testbeds, future air interfaces Applications and Systems: 3G system and link level aspects, MIMO HSDPA, MIMO-WLAN/UMTS implementation issues This book serves as a reference for scientists and engineers who need to be aware of the leading edge research in multiple-antenna communications, an essential technology for emerging broadband wireless systems.

Detailed descriptions of detection, direction-finding, and signal-estimation methods, using consistent formalisms and notation, emphasizing HF antenna array sensing applications. Adaptive antenna array technology encompasses many powerful interference suppression approaches that exploit spatial differences among signals reaching a radio receiver system. Today, worldwide propagation phenomenology occurring in the High Frequency (HF) radio regime has made such interference common. In this book, Jay Sklar, a longtime researcher at MIT Lincoln Laboratory, presents detailed descriptions of detection, direction-finding, and signal-estimation methods applicable at HF, using consistent formalisms and notation. Modern electronic system technology has made many of these techniques affordable and practical; the goal of the book is to offer practicing engineers a comprehensive and self-contained reference that will encourage more widespread application of these approaches. The book is based on the author's thirty years of managing MIT Lincoln Laboratory work on the application of adaptive antenna array technologies to the sensing of HF communication signals. After an overview of HF propagation phenomenology, communication signal formats, and HF receiver architectural approaches, Sklar describes the HF propagation environment in more detail; introduces important modulation approaches and signaling protocols used at HF; discusses HF receiver system architectural features; and addresses signal processor architecture and its implementation. He then presents the technical foundation for the book: the vector model for a signal received at an adaptive array antenna. He follows this with discussions of actual signal processing techniques for detection and direction finding, including specific direction-finding algorithms; geolocation techniques; and signal estimation.

This book constitutes the refereed proceedings of the 23rd International Conference on Distributed and Computer and Communication Networks, DCCN 2020, held in Moscow, Russia, in September 2020. Due to the COVID-19 pandemic the conference was held online. The 43 papers were carefully reviewed and selected from 167 submissions.The papers are organized in the following topical sections: computer and communication networks and technologies; analytical modeling of distributed systems, and distributed systems applications. .

Due to the increasing demand for security and reliability in manufacturing and mechatronic systems, early detection and diagnosis of faults are key points to reduce economic losses caused by unscheduled maintenance and downtimes, to increase safety, to prevent the endangerment of human beings involved in the process operations and to improve reliability and availability of autonomous systems. The development of algorithms for health monitoring and fault and anomaly detection, capable of the early detection, isolation, or even prediction of technical component malfunctioning, is becoming more and

more crucial in this context. This Special Issue is devoted to new research efforts and results concerning recent advances and challenges in the application of "Algorithms for Fault Detection and Diagnosis", articulated over a wide range of sectors. The aim is to provide a collection of some of the current state-of-the-art algorithms within this context, together with new advanced theoretical solutions.

The widespread use of adaptation techniques has helped to meet the increased demand for new applications. From adaptive signal processing to cross layer design, Adaptation in Wireless Communications covers all aspects of adaptation in wireless communications in a two-volume set. Each volume provides a unified framework for understanding adaptation and relates various specializations through common terminologies. In addition to simplified state-of-the-art cross layer design approaches, they also describe advanced techniques, such as adaptive resource management, 4G communications, and energy and mobility aware MAC protocols.

The book "Intelligent System and Computing" reports the theory, mathematical models, algorithms, design methods, and applications of intelligent systems and computing. It covers various disciplines including computer and information science, electrical and computer engineering, natural sciences, economics, and neuroscience. The broad-ranging discussion covers the key disciplines in computational science and artificial intelligence as well as advances in neuromorphic computing, deep learning, the Internet of Things, computer vision, and many others. This volume provides both academics and professionals with a comprehensive overview of the field and presents areas for future research.

Forensic Speaker Recognition: Law Enforcement and Counter-Terrorism is an anthology of the research findings of 35 speaker recognition experts from around the world. The volume provides a multidimensional view of the complex science involved in determining whether a suspect's voice truly matches forensic speech samples, collected by law enforcement and counter-terrorism agencies, that are associated with the commission of a terrorist act or other crimes. While addressing such topics as the challenges of forensic case work, handling speech signal degradation, analyzing features of speaker recognition to optimize voice verification system performance, and designing voice applications that meet the practical needs of law enforcement and counter-terrorism agencies, this material all sounds a common theme: how the rigors of forensic utility are demanding new levels of excellence in all aspects of speaker recognition. The contributors are among the most eminent scientists in speech engineering and signal processing; and their work represents such diverse countries as Switzerland, Sweden, Italy, France, Japan, India and the United States. Forensic Speaker Recognition is a useful book for forensic speech scientists, speech signal processing experts, speech system developers, criminal prosecutors and counter-terrorism intelligence officers and agents.

This book explores the development of an improved algorithm for the demodulation of sampled-data frequency modulation (FM) signals. The developed algorithm, which is a modified form of the standard differentiate-divide FM demodulator was modelled in MATLAB/SIMULINK environment. Its silicon area requirement on an FPGA chip was investigated using Quartus software. Results show that the developed algorithm has a higher time/silicon area ratio compared to the standard differentiate-divide demodulator.

This book brings together papers from the 2018 International Conference on Communications, Signal Processing, and Systems, which was held in Dalian, China on July 14–16, 2018. Presenting the latest developments and discussing the interactions and links between these multidisciplinary fields, the book spans topics ranging from communications, signal processing and systems. It is aimed at undergraduate and graduate electrical engineering, computer science and mathematics students, researchers and engineers from academia and industry as well as government employees.

Adaptive techniques play a key role in modern wireless communication systems. The concept of adaptation is emphasized in the Adaptation in Wireless Communications Series through a unified framework across all layers of the wireless protocol stack ranging from the physical layer to the application layer, and from cellular systems to next-generation wireless networks. This specific volume, Adaptive Signal Processing in Wireless Communications is devoted to adaptation in the physical layer. It gives an in-depth survey of adaptive signal processing techniques used in current and future generations of wireless communication systems. Featuring the work of leading international experts, it covers adaptive channel modeling, identification and equalization, adaptive modulation and coding, adaptive multiple-input-multiple-output (MIMO) systems, and cooperative diversity. It also addresses other important aspects of adaptation in wireless communications such as hardware implementation, reconfigurable processing, and cognitive radio. A second volume in the series, Adaptation and Cross-layer Design in Wireless Networks(cat no.46039) is devoted to adaptation in the data link, network, and application layers.

Advances in Non-Linear Modeling for Speech Processing includes advanced topics in non-linear estimation and modeling techniques along with their applications to speaker recognition. Non-linear aeroacoustic modeling approach is used to estimate the important fine-structure speech events, which are not revealed by the short time Fourier transform (STFT). This aeroacostic modeling approach provides the impetus for the high resolution Teager energy operator (TEO). This operator is characterized by a time resolution that can track rapid signal energy changes within a glottal cycle. The cepstral features like linear prediction cepstral coefficients (LPCC) and mel frequency cepstral coefficients (MFCC) are computed from the magnitude spectrum of the speech frame and the phase spectra is neglected. To overcome the problem of neglecting the phase spectra, the speech production system can be represented as an amplitude modulation-frequency modulation (AM-FM) model. To demodulate the speech signal, to estimation the amplitude envelope and instantaneous frequency components, the energy separation algorithm (ESA) and the Hilbert transform demodulation (HTD) algorithm are discussed. Different features derived using above non-linear modeling techniques are used to develop a speaker identification system. Finally, it is shown that, the fusion of speech production and speech perception mechanisms can lead to a robust feature set.

Based on the popular Artech House classic, Digital Communication Systems Engineering with Software-Defined Radio, this book provides a practical approach to quickly learning the software-defined radio (SDR) concepts needed for work in the field. This up-to-date volume guides readers on how to quickly prototype wireless designs using SDR for real-world testing and experimentation. This book explores advanced wireless communication techniques such as OFDM, LTE, WLA, and hardware targeting. Readers will gain an understanding of the core concepts behind wireless hardware, such as the radio frequency front-end, analog-to-digital and digital-to-analog converters, as well as various processing technologies. Moreover, this volume includes chapters on timing estimation, matched filtering, frame synchronization message decoding, and source coding. The orthogonal frequency division multiplexing is explained and details about HDL code generation and deployment are provided. The book concludes with coverage of the WLAN toolbox with OFDM beacon reception and the LTE toolbox with downlink reception. Multiple case studies are provided throughout the book. Both MATLAB and Simulink source code are included to assist readers with their projects in the field.

The Reuven Ramaty High Energy Solar Spectroscopic Imager (RHESSI) satellite was launched on 5 February 2002. Its objective is to study the energy release and particle

acceleration in solar flares through observations of X-rays and gamma rays. Two novel technologies are combined to obtain both spectra and images over a broad energy range. For the spectroscopy, cooled hyperpure germanium detectors are used to cover the energy range from 3 keV to 17 MeV with unprecedented keV-class resolution. Since focusing optics are not possible for making images with such high energy photons, tungsten and molybdenum absorbing grids are used to modulate the X-rays and gamma-rays coming from the Sun as the spacecraft rotates. This allows the spatial Fourier components of the source to be determined so that images can be made in spectral ranges where astronomical images have never been produced before. These new instrumental techniques require equally innovative software to reconstruct X-ray and gamma-ray spectra and images from the observations. Ample solar activity, abundant observations, and an open data policy have attracted many researchers. Astronomers face in the RHESSI mission an exciting new scientific potential. It has unusually broad possibilities for improving our understanding of the enigmatic solar flare phenomenon that is becoming increasingly important as society depends more and more on space-based technologies. In this volume, the functioning of RHESSI is explained, the data analysis techniques including spectroscopy and image reconstruction are introduced, and the experiences of the first few months of operation are summarized. First scientific results are presented that provide the essential base for more extended studies using RHESSI data and complementary observations by instruments on other spacecraft and at ground-based solar observatories. Scientists and students will find here the latest discoveries in solar flare research, as well as inspiration for future work. The papers will serve as references for the many new discoveries to come from the continuing RHESSI observations.

These proceedings of the International Conference on Advances in Mechanics Engineering (ICAME 2012), held on the 3rd to 5th August 2012 in Hong Kong, comprise peer-reviewed papers grouped into: Materials Science and Technology; Applied Mechanics, Mechanical Engineering and Fuel; Electrotechnics, Electrical Machines and Electric Power Systems; Power Engineering; Instrumentation and Sensors; Electronic, Radio Engineering and Acoustics; Detection, Monitoring and Measurement; Computer-Aided Design and Simulation; Control, Automation and Diagnostics; Manufacturing Processes and Technologies; Hydro- and Aerodynamic Engineering; Heat Transfer, Thermal Analysis and Thermodynamics; Geotechnical Engineering and Vibration; Miscellaneous Researches for Technical Sciences.

Issues in Acoustic and Ultrasound Technology: 2012 Edition is a ScholarlyEditions™ eBook that delivers timely, authoritative, and comprehensive information about Ultrasound Technology. The editors have built Issues in Acoustic and Ultrasound Technology: 2012 Edition on the vast information databases of ScholarlyNews.™ You can expect the information about Ultrasound Technology in this eBook to be deeper than what you can access anywhere else, as well as consistently reliable, authoritative, informed, and relevant. The content of Issues in Acoustic and Ultrasound Technology: 2012 Edition has been produced by the world's leading scientists, engineers, analysts, research institutions, and companies. All of the content is from peer-reviewed sources, and all of it is written, assembled, and edited by the editors at ScholarlyEditions™ and available exclusively from us. You now have a source you can cite with authority, confidence, and credibility. More information is available at http://www.ScholarlyEditions.com/.

This book constitutes the refereed proceedings of the 7th International Conference on Independent Component Analysis and Blind Source Separation, ICA 2007, held in London, UK, in September 2007. It covers algorithms and architectures, applications, medical applications, speech and signal processing, theory, and visual and sensory processing.

This collection represents successful invited submissions from the papers presented at the 8th Annual Conference of Energy Economics and Management held in Beijing, China, 22–24 September 2017. With over 500 participants, the conference was co-hosted by the Management Science Department of National Natural Science Foundation of China, the Chinese Society of Energy Economics and Management, and Renmin University of China on the subject area of "Energy Transition of China: Opportunities and Challenges". The major strategies to transform the energy system of China to a sustainable model include energy/economic structure adjustment, resource conservation, and technology innovation. Accordingly, the conference and its associated publications encourage research to address the major issues faced in supporting the energy transition of China. Papers published in this collection cover the broad spectrum of energy economics issues, including building energy efficiency, industrial energy demand, public policies to promote new energy technologies, power system control technology, emission reduction policies in energy-intensive industries, emission measurements of cities, energy price movement, and the impact of new energy vehicle.