The 3rd International Conference on Science & Engineering in Mathematics, Chemistry and Physics 2015
(ScieTech 2015)

Conference Book

ScieTech 2015

Jakarta Room , Westin Nusa Dua Resort, Bali.
Kawasan Pariwisata Nusa Dua, BTDC Lot N-3 · Bali, Bali, 80363 · Indonesia

31 January – 01 February 2015

JOURNAL OF PHYSICS: CONFERENCE SERIES

The 3rd International Conference on Science & Engineering in Mathematics, Chemistry and Physics 2015 (ScieTech 2015)

Iinstructions for Presenters

1. Please check this Program for your presentation time(s) and room(s). Please go to the room five minutes before the session starts and report to the Session Chair.
2. Please do not exceed your allotted time. Please follow the instructions of the Session Chair.
3. If the Session Chair(s) is/are absent from the session, the last speaker should serve as the Session Chair.

Instructions for Session Chairs

Session chairs are kindly requested to do the following:
1. Calculate the time allocated for each paper in your session. The time allocated to a paper may be different in different sessions, due to uneven distributions of papers in different areas (the number to the left of a session in the "Conference Program" next page shows the number of papers allocated to this session) and a small number of absentees due to visa and other reasons.
2. Arrive at the room of the session five minutes before the session starts and identify each of the speakers for the session.
3. Do not allow presentations or the subsequent discussions to run beyond the starting time of the next presentation.
4. If the presenter of a paper is absent ("no-show"), please continue to the next presentation. Please check again at the end of the last presentation whether the "no-show" turns up. Best efforts have been made to reduce the number of no-shows; however, they may not be eliminated.
5. Each oral presentation room is equipped with an LCD projector. If something is not working properly, please contact conference staff.

Keynote Speaker

1. 

Professor Frank Stephan, National University of Singapore.

Title: Automatic Structures - Recent Results and Open Questions

Abstract:

Regular languages are languages recognised by finite automata; automatic structures are a generalisation where one looks also at automatic relations which are relations recognised by synchronous finite automata and at automatic functions which are functions whose graph is an automatic relation. Functions and relations first-order definable from other automatic functions and relations are again automatic. Automatic functions coincide with the functions computed by position-faithful one-tape Turing machines in linear time. This talk gives an overview on recent results on automatic structures and provides some concurrent research questions.

ShortBio

Frank Stephan received his doctorate from the University of Karlsruhe (T.H.) in the year 1990 in mathematics. He since then worked at the University of Karlsruhe (T.H.) until 1995, then at the Univerisity of Heidelberg until 2003, at the National ICT Australia located at the University of New South Wales until 2004 and since then at the National University

of Singapore. His working areas are in mathematical logic and theoretical computer science; in particular he works in algorithmic randomness, automata theory, inductive inference and recursion theory.

2. 

Professor Belal E. Baaquie, National University of Singapore, Singapore.

Title: Quantum Mathematics and Financial Modeling

Abstract:

The mathematics of quantum mechanics is a natural and efficient formalism for modeling financial instruments. A brief review is made of the modeling of option theory using the Feynman path integral. The modeling of forward interest rates is carried out using the framework of a two dimensional quantum field theory and the Hamiltonian is used for determining the martingale condition. An empirical analysis shows that the quantum modeling of forward interest rates is well supported by market data.

ShortBio:

Belal E Baaquie is Professor in Department of Physics National University of Singapore, Singapore. He got BS, Physics (1972), California Institute of Technology and PhD, Theoretical Physics, Cornell University, 1976. He was Research Associate, Stanford University, 1976-78, Member, Institute for Advanced Study, Princeton 1991, Physics Department, Harvard University 1998, Physics Department, National University of Singapore, 1984-2000, University Scholars Programme, Vice-Dean of Physics Dept NUS, 1998-2002.

He already published these books : Path Integrals and Hamiltonians: Principles and Methods (Cambridge University Press), The Theoretical Foundations of Quantum Mechanics (Springer Publications), Exploring Integrated Science (CRC Press), Interest Rates and Coupon Bonds in Quantum Finance (Cambridge University Press), Quantum Finance: Path Integrals and Hamiltonians for Options and Interest Rates (Cambridge University Press). His research interest are: Quantum field theory and Financial modeling based on techniques of quantum theory.

3. 

Professor Dr. Jamil Akhtar, CSIR-CEERI, Pilani-333 031, India

Title: Development of Diamond Detectors for Radiotherapy; Material & Technology

Abstract:
Diamond is a wide band gap semiconductor with atomic number close to biological tissues and cells and therefore a potential candidate among Tissue Equivalent Materials (TEM). Synthetic diamond technology has been geared up using Chemical Vapour Deposition (CVD) route to produce poly crystal and single crystal diamond sheets. Whereas sc-Diamond is more useful as dosimeter, pc-Diamond has further applications as UV and high energy particle detector. With the advancement in CVD processes for synthetic diamond substrate, understanding of material properties and related technologies has taken up momentum. The polar surface of synthetic diamond due to CVD process is often Hydrogen terminated. The oxygen termination is therefore required to suppress leakage currents in sensor applications. These issues will be addressed in the talk while explaining technology development for diamond detector in Metal-Insulator-Metal (MIM) configuration. Some experimental results shall also be shared covering I-V at different temperatures.

ShortBio:

Jamil Akhtar was born in Ghaziabad, India, in 1959. He received B.Sc (Hons) and M.Sc degrees in Physics with specialization in Electronics in 1977 and 1980 respectively. He joined BEL Ghaziabad as Planner B during 1979-80. From 1980 to 1983, he worked at CSIR-CEERI , Pilani, firstly as CSIR-JRF and then CSIR-SRF for his Ph.D. thesis work on " Study of Two-Dimensional Breakdown Phenomena in Semiconductor Devices".

Since 1983, he has been associated with the Semiconductor Devices Area of CEERI, Pilani, as Scientist. At present he holds the grade of Chief Scientist at CSIR-CEERI and heads Sensors and Nano-Technology Group. He has visited Technical University of Munich, Germany, in the year 1991-92, under DAAD fellowship program. From 1998 to 2001, he stayed at School of Physical Sciences at J.N.U., New Delhi as research fellow and received Ph.D in 2008 on Mev Ion induced re-ordering in single crystalline silicon.

He has been involved in a number of projects sponsored by DRDO, DAE, ISRO and CSIR and completed successfully with working prototypes. He has been instrumental in imparting Hands-on-Training in MEMS under NPMASS program to faculties from Engineering Institutions including IITs and central universities from all over India. His passion is to develop working prototypes.

His research interest includes; Technology for silicon based millimeterwave IMPATTs and BARITTs, Numerical techniques for semiconductor device simulation, Silicon Microstrip detectors, MEMS micro sensors, Digital Microfluidics, Silicon Carbide detectors, Soft magnetic nano-composite materials, Nanostructures and Nanotechnology, Vibrational energy localization in discrete systems, RF MEMS and Diamond technology for radiation detection in health care and high energy applications.

He is associated with AcSIR (Academy of Scientific and Innovative Research, India) as Professor and coordinates courses in Advanced Semiconductor Electronics and teaches semiconductor Device Physics. He has guided a number of Ph.D, M.Tech and B.Tech students for their thesis work registered in different universities including AcSIR. He holds four patents to his credit and more than sixty papers in international journals and more than hundred papers in international/national conferences besides a number of invited talks, internal research/technical reports and three chapters in Books. He is coeditor of a book by Springer. Dr Akhtar has been awarded Bharat Jyoti and Bharat Shiksha Ratan in 2013 and 2014 respectively. He is a life member of Indian Physics Association, Indian Nuclear Society, Instrument Society of India and IETE, India. He is a member of IEEE, USA. He has been nominated as honorary member of Chemical Society of Georgia in May 2014.

4. 

P. N. Gajjar, Department of Physics, University School of Sciences, Gujarat University,

Title : Engineering New Materials for Thermal Devices: Simulation experiments

Abstract:
Scientists have made sufficient progress in developing devices based electronics, spintronics, and photonics. But the progresses to design and develop the devices that can utilize the flow of phonons are still rare. If flow of heat in solids could be controlled as electric current in semiconductor circuits, very large numbers of innovations could happen in thermal engineering.

We know, the thermal radiation heat-ups the surface exposed by it and the efforts are always made to cool the surface. We have not made sufficient efforts to store this heat for its fruitful use at later. The first-most requirement to utilize the heat is to have a material which allows us to control the flow of heat in desire direction and/or stores the heat for longer time. At nanoscale, to study heat transport thorough a material is not an easy task because of thermal contacts to be made on nanoscale devices, heat baths and temperature sensors are to be connected at nanoscale. Not only this, the carrier of heat – Phonons is not point particle with definite properties but bundles of energy that have no mass or charge which remains unaffected by electromagnetic field. These are main causes why the devices that control the flow of heat in a desire manner are still not available for practical use.

Computer simulation helps in overcoming such problems. Because of some simulation studies, temperature profile, heat flux, thermal conductivity, negative differential thermal resistance, interface thermal resistance, thermal rectification are now known at nanoscale. Very recently, we have engineered exponential mass graded material which works as a better option for thermal

rectifier as it produces 70-75% rectification of heat flow. We are also in the process of engineering new materials which may be useful in developing thermal devices. Our results of heat transport in monoatomic, diatomic chain, linear mass graded, exponential mass graded, mass defected chain, thermal diode, thermal transistor and thermal logic gates will be presented during the talk. Such study will help in understanding heat transport mechanism in conducting and non-conducting polymers, RNA/DNA chains, nanowires, nanotubes, etc.. Such study is useful in designing molecular/nano-heat pumps and nano-thermal devices.

Shortbio:

Prof. P. N. Gajjar born on September 15, 1966. He had his M. Sc., M. Phil. and Ph. D. in Physics. His field of specialization is Condensed Matter Theory / Computational Materials Science / Non linear dynamics. He is Professor and Head, Department of Physics, Gujarat University, Ahmedabad, Gujarat, India. He has visited Italy, Vietnam, Sri Lanka, France, Poland, Singapore, Malaysia, Hong Kong, Indonesia for the presentation of research work and invited talks. He is a member of many academic committees and Fellow of Gujarat Science Academy. He had successfully completed many research projects and guided doctorate students. He has authored/co-authored more than 160 scientific papers in refereed journals of repute. He is recipients of Bharat Jyoti Award. He has credit of receiving best research papers award for five times.

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Conference Program

		Notes/Session ID
Day 1: 31 January 2015		
08:30 - 09:00		Registration Starts (available for 2 days)
09:00 - 09:10		Opening by General Chair
09:10 - 09:15		Welcome Dance : Pendet Dance
09:15-10:00		Keynote Speaker : Professor Dr. Frank Stephan - Automatic Structures - Recent Results and Open Questions
10:00 - 10:45		Keynote Speaker : Professor Dr.P. N. Gajjar - Engineering New Materials for Thermal Devices: Simulation experiments
10:45 - 11:00		Photo Session & Coffee Break
11:00 - 12:00		Sessions: Applied Physics 1 (Session Chair:)
	103	Comparison of Solar Panel Cooling System By Using DC Brushless Fan and DC Water Pump
	106	Transport phenomena in chitosan synthetic membranes with emphasis on the effect of variations in the ratio of matrix/solvent
	196	Power System HarmonicEliminationto Improve Power Quality
	116	Molecular dynamics simulation of corrosion mitigation of iron in lead-bismuth eutectic using nitrogen as corrosion inhibitor
	117	Critical Temperature Difference of a Standing Wave Thermoacoustic Prime Mover with Various Helium-Based Binary-Mixture Working Gases
	195	Food powder analysis by using transversely excited atmospheric CO2 laser-induced plasma spectroscopy
12;00 - 13:00		Lunch Break

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13:00 - 15:30	Session : Mathematics 1 (Session Chair:)	
	129	Survival Analysis of Patients with End Stage Renal Disease
	132	Improving The Performance of Customer Loyalty of Online Ticketing in Indonesia Showbiz Industry
	133	Analysis of Urban Comprehensive Carrying Capacity of the prefecture-level city in Gansu province
	136	Statistical analysis for the strength and lifetime under tension of crystalline polymeric solids
	138	Monitoring Actuarial Present Values of Term Life Insurance By a Statistical Process Control Chart
	140	Modeling Philippine Stock Exchange Composite Index Using Time Series Analysis
	104	AN OPTIMIZATION MODEL TO AGROINDUSTRIAL SECTOR IN ANTIOQUIA (COLOMBIA, SOUTH AMERICA)
	105	Comparison of conformal Toda model quantisation approaches
	154	Analysis of selected prioritization methods in the analytic hierarchy process
	160	Linear representation of algebras with non-associative operations which are satisfy in the balanced functional equations
	161	Interval estimates and their precision
	162	The Existence and Stability Analysis of the Equilibria in Dengue Disease Infection Model
	163	An Analysis of Malaysian Automobile Insurance Severity Data Using Quantile Regression
	107	On Diophantine Equation ax2 + kxy + y2 + lx = 0
	123	Robust stability of a class of differential systems with internal delays
	172	Determined position dependent Mass of the Rosen-Morse potential and its Bound state
	166	Wavelet Types Comparison for Extracting Iris Feature Based on Energy Compaction
	173	Topological defect solutions for a system of three scalar fields
15:30 15:45	Coffee Break	
15:45 - 17:30	Sessions: Pedagogy & Teaching Science (Session Chair:)	
	101	Engineering Education in Non-native Language - Malaysia/Japan twinning program -
	102	Analysis of an Online Community of an International Cultural Project
	105	Transition of learners from lower to higher Qualitative Outcome of Learning through the use of different learning tools

	107	"Oh, the Thinks You Can Think!": Using children's book to teach culturally diverse students
	112	Gender Aspects of Confounding Factors in the Preparation of Powerlifters
	113	School Survival for Novice Teacher in Malaysia
	115	Effectiveness of Dramatic Play in Vocabulary Learning Among ESL Preschoolers: Preliminary Study
	116	A Comparative Study of Cognitive Abilities among Public and Private Preschool in the State of Selangor, Malaysia
	117	Impact of visual representation on the conceptual understanding of abstract physics concept - electric flux
	118	The Design of Flipped Teacher Professional Development (FitPD)
	119	Training System for Professional Development (TaSPoD) : A System based on Kingdom of Saudi Arabia Higher Learning Institution
	120	Academic English: Different from speaking and more professional
	121	A pathway to Australian higher education: Fresh air, kind people and active classes
	122	LEVEL OF PARENTAL INVOLVEMENT IN PERMATA NEGARA CHILD CENTRE IN URBAN-RURAL AREA
	123	Model Validity of Personality in Unity Among Undergraduate University in Malaysia
	124	diskusiMAYA: The Implementation of Virtual Learning Environment for The NonTraditionall Part Time Learners
	125	THE ARMED CONFLICT AND TSUNAMI: SOURCES OF TRAUMA IN SOCIAL-CULTURAL ACEHNESS
	127	Multiple Modalities: Using Graphic Novel to stage a Shakespearean Play in a TESL classroom
	128	Teaching Style and Learning Style Model: An Overview of Grasha
19:00 - 20:00	Dinner Banquet	

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Notes/Session ID

Day 2: 01 February 2015		
08:30 -	Registration	

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09:00		
09:00-09:45	Keynote Speaker : Professor Dr. Belal E. Baaquie - Quantum Mathematics and Financial Modeling	
09:45 - 10:30	Keynote Speaker : Professor Dr. Jamil Akhtar - Development of Diamond Detectors for Radiotherapy; Material & Technology	
10:30 -10:45	Coffee Break	
10:45 - 12:00	Sessions: Informatics (Session Chair:)	
	142	A GIS-based Computational Tool for Multidimensional Flow Velocity by Acoustic Doppler Current Profilers
	148	Follicle Detection on the USG Images to Support Determination Polycystic Ovary Syndrome
	149	Data Hiding Scheme on Medical Image using Graph Coloring
	153	Mathematical analysis of the computational complexity of integer sub-decomposition algorithm
	184	RFID - based Staff Control System (SCS) in Kazakhstan
	165	An application of input-output analysis in analyzing the impacts of final demand changes on the total outputs of Japanese energy sectors: A further study
	188	Study on the self-energy function of InAs/GaAs quantum dot states
	159	Ranking Schools' Academic Performance Using a Fuzzy VIKOR
	137	New Attacks on RSA-type modulus of N=p^2 q Using Continued Fraction
12:00 - 13:00	Lunch Break	
13:00 - 15:00	Sessions: Chemical Engineering (Session Chair:)	
	139	Production of cellulose phosphate from oil palm empty fruit bunch: Effect of chemical ratio.
	141	Topological tangle modeling of di erence topology experiments: tangle analysis of DNA-protein complexes
	144	Thermal Stability of Oil Palm Empty Fruit Bunch (OPEFB) Nanocrystalline Cellulose: Effects of post-treatment of oven drying and solvent exchange techniques
	145	Carboxymethyl Cellulose (CMC) from Oil Palm Empty Fruit Bunch (OPEFB) in the new solvent Dimethyl Sulfoxide (DMSO)/Tetrabutylammonium Fluoride (TBAF)
	151	Soil Identification using Field Electrical Resistivity Method
	155	Three types of marine microalgae and Nannocholoropsis oculata cultivation for potential source of biomass production.
	156	Benzimidazole as corrosion inhibitor for heat treated 6061 Al-SiCp composite in acetic acid
	131	Monitoring the Water Quality in the Recycling Process
	164	Preparation of Biodiesel from Microalgae and Palm Oil by Direct Transesterification in a Batch Microwave Reactor

	178	The Study of Band Structure of Graphite Intercalation Compound Containing Sodium Calculated Using Density Functional Theory
	186	Dependence in Classification of Aluminium Waste
	176	Analysis and Evaluation of principal climatic factors of NDVI in the Yarlung Zangbo River Basin
	121	Biodiesel Production from WCO: A Multiloop Control System Design
	190	Characterizations of Bio-char from Fast Pyrolysis of Meranti Wood Sawdust
15:00 - 15:15	Coffee Break	
15:15 - 17:00	Sessions: Applied Physics 2 (Session Chair:)	
	108	Symbolic Calculation of Strong Shock Wave for Frozen Compressible Gas Flow Produced By Plane Piston
	111	Phytoattenuation of soil metal contamination: the effects of plant growth relgualtors (GA3 and IAA) by employing wetland macrophyte vetiver and energy plant sunflower
	122	Modeling of the pores form influence on the hydraulic resistance of membranes and their permeability
	128	Development of Cubic Bezier Curve and Curve-Plane Intersection Method for Parametric Submarine Hullform Design in order to Optimize the Hull Resistance by Using CFD
	130	Optical Materials Study by Micro - Photonics Methods
	150	Development of Ozone Technology Rice Storage Systems (OTRISS) for Quality Improvement of Rice Production
	152	Efficient evaluation of the sample variance of an~interval-valued dataset
	167	The homotopic mapping solutions for the generalized Schrodinger equation
	113	Radiation from Secondary Planar Sources in Quantum Field Theory
	185	The mode competition in a two-mode semiconductor laser
	187	Development of cans And Bottle Identification System
	189	Investigation on the achieving to strong coupling regime for InAs/GaAs quantum dot embedded in the nano-cavity
	191	Optical force surrounding a laser-illuminated tapered the gold tip optical antenna
	171	Optimization of reactor network design problem using Jumping Gene Adaptation of Differential Evolution
	192	Broadening of the Spectral Atomic Lines Analysis in High Density Argon Corona Plasma by Using Voigt Profile
	114	Projectile motion in real-life situation: Kinematics of the basketball shooting
	200	Development of Landslide Early Warning System Using Macro-bending Loss Based Optical Fibre Sensor
	109	Study of The Vector Product using Three dimensions Vector card of Engineering in Pathumwan Institute of Technology
17:00 - 17:30	Closing & Best Paper Award	

19:00 - 21:00	**Dinner**

Conference Location

The Westin Resort Nusa Dua, Bali

Westled on a white sandy beach on Bali's southern coast, The Westin Resort Nusa Dua, Bali provides travellers with a rejuvenating haven with all you need to be at your best. If you are looking for the ideal choice of a Bali five-star hotel in this part of the world, this exceptionally lavish hotel in Nusa Dua is indeed the perfect fit.

Each of our the 433 newly refurbished guestrooms and suites feature the acclaimed Heavenly® Bed to restore your mind and body with a restful night's sleep.

Re-energise and relax at The Westin Resort Nusa Dua, Bali and choose from a wide range of recreation options including three pools, a variety of water sports, two tennis courts and the WestinWORKOUT®. Alternatively indulge in the rejuvenating Heavenly Spa by Westin™.

Bali Tourist Destination Information

One of the most popular tourist destinations in the world, Bali for few years awarded as the world best island by

The International Travel Magazine. There, however, are still many people who do not know in depth about the uniqueness of Balinese culture. Life in Bali is always related to Tri Hita Karana or a tripartite concept that include the spiritual relationship between human and God, and their environment.

The rapid growth of development in tourism has had a big impact and influences to Bali tradition and lifestyle. Interestingly, Balinese culture is still as what it was, growing along with the of globalization. It is the Balinese civilization what makes the island different from other destination.

Please visit http://www.balitourismboard.org/ for more detail about Bali Tourism.