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Recent Advances in Civil and Mining Engineering

Proceedings of the 4th European Conference of Civil Engineering (ECCIE '13)

Proceedings of the 1st European Conference of Mining Engineering (MINENG '13)

Antalya, Turkey, October 8-10, 2013

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Keynote Lecture 1

Energy & Environmental Problems Facing India and Turkey and their Probable Solutions

Dr. D. P. Kothari
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Former Director General, RGI, Nagpur
Former Director General, VITS Indore
Former Vice Chancellor, VIT Vellore
Former Director I/c IIT Delhi
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Abstract: It briefly discusses some important energy problems facing India and Turkey and presents the current electric generation scenario in most of the developing countries with facts and figures in respect of India. It is hoped that, with systematic, advance planning, through measures like co-generation, energy management, and energy conservation, the electric energy supply scenario of AD 2020 will be free of the perennial problems of power shortages, voltage fluctuations etc.

Brief Biography of the Speaker: D.P.Kothari is, presently, Director General of J B Group of Institutions ,Hyderabad. He obtained his BE (Electrical) in 1967, ME(Power Systems) in 1969 and Ph.D in 1975 from the Birla Institute of Technology & Science(BITS) Pilani, Rajasthan. Prior to assuming charge as DG, JBI ,Hyderabad, he served as DG RGI , DG VGI, Indore, Vice Chancellor, VIT, Vellore, Director in-charge and Deputy Director (Administration) IIT Delhi as well as Head in the Centre of Energy Studies at Indian Institute of Technology, Delhi and as Principal, Visvesvaraya Regional Engineering College, Nagpur.

He was Visiting Professor at the Royal Melbourne Institute of Technology, Melbourne, Australia, during 1982-83 and 1989 for two years. He was also NSF Fellow at Purdue University, USA in 1992. He is fellow of Indian National Academy of Engineering (INAE), Indian National Science Academy (FNASc), Institution of Engineers, India (IEI) and Institute of Electrical and Electronics Engineers (FIEEE).He has authored /co-authored/more than 725 papers in International/National Journals/Conferences & 30 books including Power System Engineering, 2e Electric Machines, 4e Electric Machines (Sigma Series), 2e and Basic Electrical Engineering, 3e. His fields of specialization are Optimal Hydrothermal Scheduling, Unit Commitment, Maintenance Scheduling, Energy Conservation (loss minimization and voltage control), Power Quality and Energy System Planning and Modeling.

Keynote Lecture 2

Confirming the Power of Probabilistic Evolution Approach: A Concrete Application to Get the Analytical Solution

Professor Metin Demiralp
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Abstract: The last three years accumulated a great pile of information about the Probabilistic Evolution Approach (PEA) which is under construction in the Group for Science and Methods of Computing (Demiralp's group) studies. Until now, the skeleton and the roof of the theory has been constructed and many details, as if muscles and other organs, have also been revealed. Now we know how to convert a given set of explcit first order ordinary differential equations accompanied by appropriate initial conditions to an infinite first order, linear, homogeneous set of ordinary differential equations with a denumerably infinite constant coefficient matrix; accompanied by a denumerably infinite initial vector value imposition. We could be able also to obtain Kronecker power series solution when the descriptive function (right hand side function) vector has a conical structure. Even we could have been able to get finitely many term involving analytic results for rather specific ODE structures. However we have never intended to perform a resummation over the Kronecker power series obtained in Probabilistic Evolution Approach applications even though the issue has been reduced to kernel separability where the telescope and monocular matrices are in use.
In this presentation first we focus on simplest first order explicit ordinary differential equation and its accompanying initial condition, where the right hand side function does not depend on the independent variable (time variable in the dynamical system terminology) of the considered ODE and has a second degree polynomial structure in the unknown function of the ODE under consideration. If there are certain commutativity relations exist in the descriptive function coefficient matrices then it is possible to produce a matrix algebraic analytic structure for the solution. To this end a very recently developed approach we have called "Constancy Added Space Extension (CASE) " can be used. This extends the state space of the ODE from one dimension to two dimension and makes it possible to get pure quadraticity at the descriptive function. Then, by using certain very fruitful properties of the Kronecker products and powers, it becomes to generate an analytical solution if the coefficient matrix appearing in the quadratic structure of the descriptive function has certain symmetry conditions and also commutativity conditions. The presentation aims to focus on these issues as the time permits.

Brief Biography of the Speaker: Metin Demiralp was born in Türkiye (Turkey) on 4 May 1948. His education from elementary school to university was entirely in Turkey. He got his BS, MS degrees and PhD from the same institution, ˙Istanbul Technical University. He was originally chemical engineer, however, through theoretical chemistry, applied mathematics, and computational science years he was mostly working on methodology for computational sciences and he is continuing to do so. He has a group (Group for Science and Methods of Computing) in Informatics Institute of ˙Istanbul Technical University (he is the founder of this institute). He collaborated with the Prof. Herschel A. Rabitz's group at Princeton University (NJ, USA) at summer and winter semester breaks during the period 1985-2003 after his 14 month long postdoctoral visit to the same group in 1979-1980. He was also (and still is) in collaboration with a neuroscience group at the Psychology Department in the University of Michigan at Ann Arbour in last three years (with certain publications in journals and proceedings).
Metin Demiralp has more than 100 papers in well known and prestigious scientific journals, and, more than 230 contributions together with various keynote, plenary, and, tutorial talks to the proceedings of various international conferences. He gave many invited talks in various prestigious scientific meetings and academic institutions. He has a good scientific reputation in his country and he was one of the principal members of Turkish Academy of Sciences since 1994. He has resigned on June 2012 because of the governmental decree changing the structure of the academy and putting politicial influence possibility by bringing a member assignation system. Metin Demiralp is also a member of European Mathematical Society. He has also two important awards of turkish scientific establishments.
The important recent foci in research areas of Metin Demiralp can be roughly listed as follows: Probabilistic Evolution Method in Explicit ODE Solutions and in Quantum and Liouville Mechanics, Fluctuation Expansions in Matrix Representations, High Dimensional Model Representations, Space Extension Methods, Data Processing via

Multivariate Analytical Tools, Multivariate Numerical Integration via New Efficient Approaches, Matrix Decompositions, Multiway Array Decompositions, Enhanced Multivariate Product Representations, Quantum Optimal Control.

Plenary Lecture 1

Why Does Sustainability Play an Important Role for Reinforced Concrete Structures?

Professor Corneliu Bob
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University "Politehnica" of Timisoara
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Abstract: The idea of offering and assuring sustainable solutions for construction works is a new and very important target in this field. International and national organizations started to develop new standards related to sustainability issues in civil engineering which will play an important role in our every day lives.
Although concrete is the leading construction material, it is considered non-ecologic due to the great amount of CO2 emission arising mainly, from the manufacturing of cement. In addition concrete has a lot of main disadvantages, like: small tensile strength, high density, low thermal insulation, water permeability, low ductility and so on. On the other hand, concrete has major advantages (fire resistance, durability, architectural flexibility, low cost, high stiffness, etc.) and the ability of changing its characteristics by using new materials and technology.
The present lecture is dedicated to the following subjects:
- General characteristics of ordinary concrete
- New trends of concrete properties
- Sustainability assessment of construction works
- Special aspects of concrete structures sustainability
- Author's researches on CO2 uptake through concrete carbonation, self-compacting concrete and high performance concretes.

Brief Biography of the Speaker: Prof. Corneliu BOB, graduated at the University „Politehnica" of Timisoara – Romania in 1961 and Ph.D. Civil Engineering in 1971 at the same University. In 1990 he became professor of R.C. Structures and Ph.D. – Scientific Coordinator at the Civil Engineering Faculty in Timisoara. From 1996 till 2004 he was the Head of the National Building Research Institute – Timisoara Branch.
Professor Bob has also been very active in the Romanian Associations for Civil Engineering: National Association Engineering for Structural Analysis, Bucharest, Romanian Concrete Commission, Romanian Academy – Material Science.
Member of IABSE since 1992, Prof. Bob became the member in Permanent Committee, Commission WC-8 (WC-4), Editorial Board of Structural Engineering Documents (SED) and in the same time, vice-chairmen of IABSE Romanian Group. In the last years he has been involved, with good results, in the WSEAS activities (Editor-2009, Plenary Lectures-2009, 2010, 2012).
Prof. Bob has had many and major contributions in the field of Structural Engineering:
(i). He participated as designer at more than 70 structures projects. In the last 15 years his attentions was paid to the design of the RC prefabricated structures: 25 structures have been projected and built up with more than 100000 m2 built surface. An important contribution of Prof. Bob in this field was in a patent concerning the „RC prefabricated structures with rigid nodes".
(ii). A very important field of work was paid to evaluation and rehabilitation of existing buildings. He participated at 75 projects of maintenance and rehabilitation of some important structures affected by seismic actions, gas explosions as well as time environmental factors. A very notable contribution is the „Model of reinforcement corrosion in RC Structures.
(iii). Prof. Bob C. has published many books and papers in Journals and Proceedings of National and International Meetings. The field of interest of works is: rehabilitation of structures, analysis and design of structures, durability of buildings, new special concrete types, building sustainability.
Prof. Corneliu BOB played an important role in development of assessing of existing structures and in design of new buildings and he has devoted great energy in promoting the role of students and young engineers as designers and researchers.

Plenary Lecture 2

Expert System to Train Young Professionals on Influencing Shifting from Passive to Active Transport

Professor Riza Atiq Rahmat
Director of Centre for Academic Advancement and
Head of Intelligent Transport System
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Abstract: A growing number of Asian cities have high numbers of private car making up the majority of traffic. This has resulted in the negative impact of traffic congestion, road safety, air pollution and climate change. Many policy measures to reduce these problems have been implemented, such as widening the roads, limiting speed, upgrading the motorcycle lanes and upgrading public transport, but there are less measures and encouragement for the provision of active transport (cycling and walking) in Malaysia. This paper presents the development of an expert system to train young professional on implementation strategies for influencing of shifting from passive to active transport in the framework of sustainable urban transport. One of the process of organizing the available knowledge of active transport strategies is to capture the views among transportation experts regarding the most appropriate strategies to shift from motorized to active transport. There are eight (8) main objectives of transportation planning to achieve in planning of active transport such as congestion reduction, road and parking cost reduction, consumer cost reduction, crash risk reduction, air and noise pollution reduction, energy conservation, economic development benefits and liveable communities. As a result, apart from the main objectives, specific objectives on mobility management strategies are divided into four (4) major categories according to how they affect the travel, thus ; improves transport option, land use management, price incentive and other implementation programs is encoded in the expert system shell developed for the purpose by using shell expert system Kappa-PC version 2.4.

Brief Biography of the Speaker: Prof. Ir. Dr Riza Atiq obtained his B.Eng. (Civil Engineering) in 1980, M.Eng (Tranportation Engineering) in 1991 from UTM and PhD from UKM in 2002. He started his academic carrier in UKM in 1994 after working as an engineer with City Hall of Kuala Lumpur for 14 years. While in City Hall he developed a transport model for Kuala Lumpur and surrounding area for planning purposes. He has five intellectual properties, three books, more than 100 scientific research papers and 14 innovation awards including one from Geneva, three from Korea and one from IEM. His research is mainly in Sustainable Urban Transport and Intelligent Transport System. His professional expertise includes urban transport planning, urban transport management and sustainable urban transport. His current post in Universiti Kebangsaan Malaysia (UKM) is the Director of Centre for Academic Advancement and research fellow at Sustainable Urban Transport Research Centre (SUTRA). . While holding the post, he initiated the formulation of 11 policies to transform the curriculum and teaching-learning practices in UKM. His professional qualification includes being a professional engineer (Civil Engineers, Board of Engineers Malaysia) and member of Road Engineering Association of Asia and Australasia.