

## Integrating Structural Analysis, Risk & Reliability

**4<sup>th</sup> International ASRANet Colloquium**

**Crowne Plaza Athens City Centre**

**50 Mihalakopoulou Avenue**

**Athens, 11528 Greece**

**25 – 27<sup>th</sup> June 2008**





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**WEDNESDAY 25<sup>th</sup> JUNE, 2008 (BALLROOM E)**

08 00 Registration

08 50 Opening session

09 00 [Keynote Paper: Reliability-based Codes in the United States: Challenges to Professional Engineering Practice; Bruce Ellingwood, Georgia Institute of Technology, USA.](#)

**Session 1 Reliability-Based Design & Optimisation**

Co-chairs: *Marios Chryssanthopoulos & Milan Holicky*

09 40 [Reliability Based Design Optimisation: An Application to the Buckling of Imperfect Shells; Vincent Dubourg, Claudine Noirfalise and Jean-Marc Bourinet, Institut Francais de Mécanique Avancée, France.](#)

- 10 00 [Reliability Based Risk Optimisation; André T. Beck and Camila Verzenhassi, University of São Paulo, Brazil.](#)
- 10 20 [Failure Event Analysis and Optimisation of a Submerged Underwater Critical Structure against Non Deterministic Current Loading Conditions with the use of the Finite Element Method; D. Mazarakos, Christos Derdas and V. Kostopoulos, University of Patras, Greece.](#)
- 10 40 [From Prescriptive to Probabilistic Reliability Assessment Methods; Pavel Marek and Vít Křivý, VŠB – Technical University of Ostrava, Czech Republic.](#)
- 11 00 [Reliability and Robustness-Based Design Optimisation \(RRBDO\); Dimos C. Charmpis, University of Cyprus.](#)

**11 20 – 11 50 Coffee**

**Session 2 System Reliability**

Co-chairs: *Sirous Yasseri & Dimitri Val*

- 11 50 [Does the Operation Safety of Energy Industry Exhibit Self Organised Criticality?; Sirous Yasseri, KBR, UK.](#)
- 12 10 [Calculation and Interpretation of Realistic Reliability Estimates; Stuart Reid, University of Sydney, Australia.](#)
- 12 30 [Reliability Analysis of Lifeline Network using Markov-Chain Monte Carlo Simulation; Hitoshi Furuta, Kenta Miyake, Tadanobu Sato and Isao Tsukiyama, Kansai University, Japan.](#)
- 12 50 [Development of Diagnosis and Control System for Water Supply Network using Artificial Immune System; Masashi Yamawaki, Wataru Shiraki and Hitoshi, University of Kagawa, Japan](#)

**13 10 – 14 10 Lunch (FOYER)**

- 14 10 [\*\*Keynote Paper: Reliability-based Analysis of Codified Design Allowing for Production Quality; Milan Holicky, Czech Technical University in Prague, Czech Republic.\*\*](#)

**Session 3 Accidental Loads**

Co-chairs: *Manolis Samuelides & Spyros Hirdaris*

- 14 50 [A Probabilistic Risk Assessment Approach to Decision-Making for Explosively-Loaded Ship Panels; Spiro Pahas and Purnendu K. Das, Universities of Glasgow & Strathclyde, UK.](#)
- 15 10 [First Principles Collision Risk Analysis of a ROPAX Vessel; George Mermiris, Dimitris Konovessis & Dracos Vassalos, Universities of Glasgow & Strathclyde, UK.](#)
- 15 30 [Collision-Accidental Limit States Performance of Double Hull Oil Tanker Structures: Pre-CSR Design versus CSR Design' Jeom Kee Paik & Jae Hyung Park, Pusan National University, Korea and Manolis Samuelides, University of Athens, Greece.](#)
- 15 50 [Survey on Navigational and Non-Navigational Accidents: Statistical Analysis and risk Assessment; N.P. Ventikos, I.C. Gemelos, Manolis Samuelides, National Technical University of Athens, Greece and Jeom Kee Paik, National Pusan University, Korea.](#)

**16 10 – 16 40 Tea**

- 17 00 [Security Risks and Safety Hazards for Building Facades; Mark G. Stewart and Michael D. Netherton, University of Newcastle, Australia.](#)
- 17 20 [Internal Gas Explosion Related Risks in Large Panel System Buildings; T.D.G Canisius, Scott Wilson plc, UK.](#)
- 17 40 [Robustness Assessment of a Long Span Suspension Bridge in Presence of Different Contingency Scenarios; Luisa Giuliani, Konstantinos Gkoumas and Franco Bontempi, University of Rome, Italy.](#)

**18 00 Session ends**

**WEDNESDAY 25<sup>th</sup> JUNE, 2008 (BALLROOM D)**

**09 00 Keynote Paper – (BALLROOM E)**

## Session 4 Fatigue & Fracture

Co-chairs: *Sharif Rahman & Stefano Berratta*

- 09 40 [Estimation of Crack Propagation in a Passenger Ship's Door Corner; Mika Bäckström and S. Kivimaa, VTT Technical Research Centre of Finland.](#)
- 10 00 [Reliability Assessment of Structures Subjected to Fatigue Failure; Nicolas Gayton and Maurice Lemaire, Institut Français Mécanique Avancée, France.](#)
- 10 20 [Probabilistic approach to fatigue damage of steel bridge; Milos Rieger and Pavel Marek, Technical university of Ostrava, Czech Republic.](#)
- 10 40 [FORM Sensitivities to Correlation: Application to Fatigue Crack Propagation Based on Virkler Data; Jean-Marc Bourinet and Maurice Lemaire, Institut Français Mécanique Avancée, France.](#)
- 11 00 [The Effect of Crack Geometry on Time-Variant Reliability of Tubular Components; Neill Renton, W.F. Deans and Michael J. Baker, University of Aberdeen, UK.](#)

### 11 20 – 11 50 Coffee

- 11 50 [Simulation of the Behaviour of Fatigue Cracks: A Tool for Inspection Decision Making on a Ship's Deck Beam; Virginie Boutillier, Michelle Serror and Guy Paramentier, Bureau Veritas, France.](#)
- 12 10 [An RV Approach for the Analysis of Fatigue Crack Growth with NASGRO Equation; Stefano Beretta, M. Carboni and A. Villa, Politecnico di Milano, Italy.](#)
- 12 30 [Analytical Study on Repair Method for Existing Riveted Joints Replaced some rivets by High Strength Bolts as Frictional Connection; Kunitaro Hashimoto, Shinko wire Co. Ltd. and Takashi Yamaguchi & Toshiyuki Kitada, Osaka City University, Japan.](#)
- 12 50 [A Response Surface Approach to Fatigue Reliability of Ship Structures; L. Yu, Y. Zheng, Lloyd's Register and Purnendu K. Das, Universities of Glasgow & Strathclyde, UK.](#)

### 13 10 – 14 10 Lunch (FOYER)

### 14 10 Keynote Paper – (BALLROOM E)

## Session 5 Reliability of Concrete Structures

Co-chairs: *Riccardo Foschi & Mark Stewart*

- 14 50 [Reliability of Reinforced Concrete Bridge Decks with Respect to Ingress of Chlorides; Petr Konecny, Technical University of Ostrava, Czech Republic and Paul J. Tikalsky, University of Utah, USA.](#)
- 15 10 [Cracking Criteria for Hardening Concrete Structures Analysed by a Probabilistic Approach; HWM van der Ham, EAB Koenders and K. van Breugel, Delft University of Technology, Greece.](#)
- 15 30 [Probabilistic Evaluation of Deflections and Natural Frequencies of RC Beams Subject to Corrosion; Dimitri V Val, Herriot Watt University, UK and Leonid Chernin, Isreal Institute of Technology.](#)
- 15 50 [Long-Time Observation of a RC Chimney's Stiffness with the use of Wind-Excited Vibration; Ondřej Fischer, Miroš Pirner and Shota Urushadze, Academy of Sciences, Czech Republic](#)

### 16 10 – 16 40 Tea

## Session 6 Structural Health Monitoring

Co-chairs: *Marcello Ciampoli & Jorgen Jensen*

- 16 40 [Bridge Management using Structural Health Monitoring; Hitoshi Furuta, Kohei Yoshida, Hiroshi Hattori and Takuya Ohama, Kansai University, Japan.](#)
- 17 00 [The Combined Use of Vibration, Acoustic Emission and Oil Debris Sensor Monitored Data coming from Rotating Machinery for the Development of a Robust Health Monitoring System; T.H. Loutas, J. Kalaitzoglou and V. Kostopoulos, University of Patras, Greece.](#)
- 17 20 [Slow and High Speed Structural Monitoring of Suspension Bridges; Stefania Arangio, Konstantinos Gkoumas and Franco Bontempi, University of Rome, Italy.](#)

17 40 [Use of Structural Monitoring for Up-dating Reliability Analysis: Application on Pile-Supported Wharves; Humberto Yáñez-godoy & Franck Schoefs, Nantes Atlantic University and Marc Lasne, OXAND SA, France.](#)

18 00 **Session ends**

**THURSDAY 26<sup>th</sup> JUNE, 2008 (BALLROOM E)**

09 00 [\*\*Keynote Paper: Limit States Design and Structural Reliability: The Canadian Context; Riccardo Foschi, University of British Columbia, Canada\*\*](#)

**Session 7 Seismic Reliability**

Co-chairs: *Bruce Ellngwood & Nawal Prinja*

09 40 [Seismic Load Factor Optimisation for Turkish Seismic Design Code; Armagan Korkmaz, Suleyman Demirel University and Engin Aktas, Izmir Institute of Technology, Turkey.](#)

10 00 [A spot on the Reliability of Dynamic Interactive Behaviour of 3-D Frame-Shear Wall-Raft Soil Mass System; R El-bordany, Housing & building National Research Centre and M El-Meligy, El-Mansoura University, Egypt.](#)

10 20 [Seismic Performance of RC Bridge Piers Considering Ageing of Base-Isolated Rubber; Takeshi Kitahara, Kanto Gakuin University, Japan.](#)

10 40 [First Excursion Probability and Peak Response of a Shear Beam under High Frequency Seismic Effects; Zbigniew Zembaty, Opole University of Technology, Poland.](#)

11 00 [Uniform Hazard Vs. Uniform Risk Bases for Performance-based Earthquake Engineering of Light-Frame Wood Construction; Yue Li & William M. Bulleit, Michigan Technological University and Bruce R. Ellingwood, Georgia Institute of Technology, USA.](#)

**11 20 – 11 50 Coffee**

11 50 [Structural Assessment of Low Rise R/C Buildings in Turkey; Armagan Korkmaz, Suleyman Demirel University, Turkey.](#)

12 10 [A Study on the seismic Reliability for the Stability of Cantilever Retaining Wall; Fu-Kup Huang, Tamkang University and Grace S. Wang, Chaoyang University of Technology, Taiwan.](#)

12 30 [A New Computational Method for Seismic Hazard Analysis; Grace S. Wang, Chaoyang University of Technology and F.K. Huang, Tamkang University, Taiwan.](#)

12 50 [Seismic Reliability of an EC8-Designed Steel Moment Resisting Frame; A K Kazantzi and T D Righiniotis, University of Surrey, UK.](#)

**13 10 – 14 10 Lunch (FOYER)**

14 10 [\*\*Keynote Paper: Multiscale Fracture of Random Heterogeneous Materials; Sharif Rahman, University of Iowa, USA.\*\*](#)

**Session 8 Reliability of Composite Structures**

Co-chairs: *Stuart Reid & Vasillis Kostopoulos*

14 50 [Reliability Analysis of Stiffened Composite Panel; Nana Yang and Purnendu K. Das, Universities of Glasgow & Strathclyde, UK.](#)

15 10 [Variabilistic Multilevel Strategy for Composite Structures; Nicolas Carrere and J.F. Maire, ONERA, France.](#)

15 30 [The Application of Reliability Methods in the Design of Stiffened FRP Composite Panels for Marine Vessels; James I.R. Blake & R. A. Sheno, University of Southampton and Purnendu K. Das & Nana Yang, Universities of Glasgow & Strathclyde, UK.](#)

**15 50 – 16 20      Tea**

- 16 20 [Reliability-Based Optimisation of a Stiffened Composite Panel Structure Subjected to Uniaxial Compressive Load; Hao Wu & Ying Yan, Beihang University, China and R. Ajit Shenoi & Jing Tang Xing, University of Southampton, UK.](#)
- 16 40 [Spatial property characterisation of GFRP cladding panels: S Sriramula and M K Chryssanthopoulos, University of Surrey, UK.](#)
- 17 00 [Time Variant Assessment for Adhesively-Bonded Assemblies with Non-Linear Behaviour in Naval Applications; Mejri Mohamed and Jean-Yves Cognard, ENSIETA, France.](#)

**17 20    Session ends**

**19 30    CONFERENCE DINNER (CROWNE PLAZA, DEMOCRITUS ROOM)**

**THURSDAY 26<sup>th</sup> JUNE, 2008 (BALLROOM D)**

**09 00    Keynote Paper – (BALLROOM E)**

**Session 9      Risk-based Integrity Management**

Co-chairs:      *Bruno Sudret & Toula Onoufriou*

- 09 40 [Bridge Management and Its Accounting Systems; Hirokazu Yamamoto Osaka Branch Central Consultants; Keiichi Yasuda, Newjtec; Mitsuru Jido, CFK Consultants and Hitoshi Furuta, Kansai University, Japan.](#)
- 10 00 [Expert Judgement for Combining NDT Tools in RBI Context: Application to Marine Structures; Jérôme Boreo & Franck Schoefs, Nantes Atlantic University and Bruno Capra, OXAND SA, France.](#)
- 10 20 [Performance-based Wind Engineering as a Tool for the Design of the Hangers in a Suspension Bridge; Marcello Ciampoli, Franco Bonntempi and Francesco Petrini, University of Rome, Italy.](#)
- 10 40 [Minimisation of Structure Lifetime Cost Through Provision of a Two Stage Assessment Process; Alan O'Connor & Emma Sheils, Trinity College, Ireland; Denys Breysse, Universite Bordeaux, France and Franck Schoefs, Nantes Atlantic University, France.](#)
- 11 00 [Optimum Preventative Maintenance Strategies using Genetic Algorithm and Bayesian Updating; Elia A. Tantele and Toula Onoufriou, Cyprus University of Technology, Cyprus.](#)

**11 20 – 11 50      Coffee**

**Session 10      Structural Reliability Applications**

Co-chairs:      *Dimos C. Charmpis & Gerard Canisius*

- 11 50 [A Model for the Correlation Structure of the Random Out-of-Flatness Imperfection of the Plates; F. Cafarella and A. Braconi, University of Pisa, Italy.](#)
- 12 10 [Sensitivity Analysis of Ultimate Resistance of Steel Plane Frames to Imperfections; Abayomi Omishore and Zdeněk Kala, Brno University of Technology, Czech Republic.](#)
- 12 30 [Simulation-Based Reliability Assessment of Timber Structures; Antonín Lokaj and Pavel Marek, VŠB-TU Ostrava, Czech Republic.](#)
- 12 50 [Reliability Analysis of Wind Turbines; Henrik Stensgaard Toft and John Dalsgaard Sørensen, Aalborg University, Denmark.](#)

**13 10 – 14 10      Lunch (FOYER)**

**14 10    Keynote Paper – (BALLROOM E)**

**Session 11      Computation Methods in Structural Reliability Analysis – I**

Co-chairs:      *Bernt Leira & Lyuven Ivanov*



- 14 50 [Current Possibilities of Direct Determined Fully Probabilistic Method \(DDPFM\); Petr Janas, Martin Krejsa and Vlastimil Krejsa, VSB – Technical University of Ostrava, Czech Republic.](#)
- 15 10 [Comparison of Approaches to Life-Cycle Analysis of Structural Reliability using Renewal Processes; Mirek Sykora, Czech Technical University, Czech Republic.](#)
- 15 30 [On the Adequacy of Metamodelling Techniques in Probabilistic Design of Railway Sleepers; Johanna Lilja, Thomas J.S. Abrahamsson and Jens C.O. Nielsen, Chalmers University of Technology, Sweden.](#)

**15 50 – 16 20 Tea**

- 16 20 [Reliability of Piecewise Linear Systems Subject to Stochastic Excitations; Kyriakos Perros and Costas Papadimitriou, University of Thessaly, Greece.](#)
- 16 40 [Derivation of Probability Distribution Parameters through L-Moments; G. Najafian, University of Liverpool, UK.](#)
- 17 00 [Adaptive Sparse Polynomial Chaos Expansions – Application to Structural Reliability; Geraud Blatman and Bruno Sudret, Institut Francais Mécanique Avancée, France.](#)

**17 20 Session ends**

**19 30 CONFERENCE DINNER (CROWNE PLAZA, DEMOCRITUS ROOM)**

**FRIDAY 27<sup>th</sup> JUNE, 2008 (BALLROOM E)**

- 08 30 [Keynote Paper: Wave Loads for Ship/Marine Structures – Stochastic Procedures for Extreme Load Predictions; Jorgen Juncher Jensen, Technical University of Denmark, Denmark.](#)
- 09 10 [Keynote Paper: Some Recent Advances and Future Trends in Nonlinear Structural Mechanics for Ships and Offshore Structures; Jeom Kee Paik, Pusan National University, Korea.](#)

**Session 12 Marine Structures**

Co-chairs: *Jeom Paik & Purnendu Das*

- 09 50 [Ultimate Limit State Performance of 300k Double Hull Oil Tanker Structures: Pre-CSR Design Versus CSR Design; Jeom Kee Paik, Sang Wook Hwang, Jun Seok Park, Pusan National University, Korea and Emmanuel Samulides, National Technical University of Athens, Greece.](#)
- 10 10 [Ultimate Limit State Performance of 170k Bulk Carrier Structures: Pre-CSR Design versus CSR Design; Jeom Kee Paik & Jae Min Chung, Pusan National University and Jin Young Kim, Registro Italiano, Busan Office, Korea.](#)
- 10 30 [Prediction of Ultimate Global Behaviour of Bulk Carriers under Double Bottom Bending; Hadi K.K. Amlashi and Torgeir Moan, Norwegian University of Science & Technology, Norway.](#)

**10 50 – 11 20 Coffee**

- 11 20 [Challenges and Possible Solutions of the Time-Variant Reliability of Ship's Hull Girder; Lyuben D Ivanov, American Bureau of Shipping, Technology, Houston, USA.](#)
- 11 40 [System Reliability Analysis of Ship Transverse Frame; P. Radha and Purnendu K. Das, Universities of Glasgow & Strathclyde, UK.](#)
- 12 00 [Reliability-based Dynamic Position Control of Floating Vessels: A Numerical and Experimental Study; Bernt J. Leira, P.I. Berntsen and O.M. Aamo, Norwegian University of Science & Technology, Norway.](#)

**12 30 Session ends**

**FRIDAY 27<sup>th</sup> JUNE, 2008 (BALLROOM D)**

- 08 30 **Keynote Paper – (BALLROOM E)**
- 09 10 **Keynote Paper – (BALLROOM E)**

**Session 13 Computation Methods in Structural Reliability Analysis – II**

Co-chairs: *Pavel Marek & Alan O'Connor*

- 09 50 [Dealing with Noisy Limit State Function in Structural Reliability Assessment of a Crashed Thin-Walled Beam; R. Stocki, P. Tazowski and J. Knabel, Institute of Fundamental Technological Research, Polish Academy of Sciences, Poland.](#)
- 10 10 [Use of Polynomial Chaos Expansions in Stochastic Inverse Problems; F. Perrin, Institut Francais de Mécanique Avancée; Bruno Sudret, Electricité de France, R&D Division and M. Pendola, Phimeca Engineering SA, France.](#)
- 10 30 [Application of Coupled RKHS-HDMR to Stochastic Mechanics and Reliability; Rajib Chowdhury, B.N. Rao and A. Meher Prasad, Indian Institute of Technology, India.](#)

**10 50 – 11 20      Coffee**

- 11 20 [PDEM-based Reliability Evaluation of Nonlinear Stochastic Dynamical Systems; J.B.Chen, W.L.Fan & J. Li, Tongji University, China.](#)
- 11 40 [Optimal Performance Control of Stochastic Dynamical Systems; J. Li, Y.B.Peng & J.B.Chen, Tongji University, China.](#)
- 12 00 [Using Acoustic Emission Technology for Detecting Structural Defects; A. Anastasopoulos & D. Kourousis, Envirocoustics ABEE, GREECE, S. Botten, Physical Acoustics Corporation, USA, G. Wang, American Bureau of Shipping, USA.](#)

**12 20    Session ends**