

**4<sup>th</sup> Asia-Pacific International Symposium on Advanced Reliability and  
Maintenance Modeling (APARM 2010)**

**2 – 4 December 2010, Wellington, New Zealand**

**Scientific Programme**

<b>Day 1: Thursday 2 December 2010</b>	
<b>Welcome Breakfast 7:30 – 9:15 (AM102)</b>	
<b>APARM 2010 Opening 9:15 – 9:40 (CO122)</b>	
<b>Chin-Diew Lai, <i>Constructions and applications of ageing distributions</i> Chair: Min Xie Plenary talk 9:40 – 10:30 (CO122)</b>	
<b>Morning Tea/Coffee Break 10:30 – 11:00 (AM102)</b>	
<b>Room 1 (CO122) Topic: Maintenance Modeling</b> <span style="float: right;"><b>Chair: Mingchih Chen</b></span>	
11:05 – 11:30	Mingchih Chen and Toshio Nakagawa. <i>Optimal random replacement models with continuously processing jobs</i>
11:30 – 11:55	Jih-An Chen and Yu-Hung Chien. <i>Optimal discrete-time spare ordering policy with random lead time</i>
11:55 – 12:20	Kodo Ito and Toshio Nakagawa. <i>Optimal multi-echelon maintenance of aircraft</i>
<b>Room 2 (CO118) Topic: Reliability Applications</b> <span style="float: right;"><b>Chair: Ivy Liu</b></span>	
11:05 – 11:30 <b>PRESENTATION CANCELLED</b>	<del>Siti Azirah Asmai, Burairah Hussin, Abd. Samad Hasan Basari and Nuzulha Khilwani Ibrahim. <i>Equipment condition-based prognosis using logistic regression: An industrial case study</i> NB: one other cancellation in this session.</del>
11:30 – 11:55	Chin-Diew Lai, Ricardas Zitikis and Mark Bebbington. <i>Exporting reliability theory to the social sciences</i>
11:55 – 12:20 <b>PRESENTATION CANCELLED</b>	<del>Renkuan Guo, Tim Dunne, Yanhong Cui and Danni Guo. <i>Quality concept under an uncertainty environment</i> NB: one other cancellation in this session.</del>
<b>Room 3 (CO119) Topic: Accelerated Life Tests</b> <span style="float: right;"><b>Chair: Michael Pecht</b></span>	
11:05 – 11:30	Rubyca Jaai, Vidyu Challa and Michael Pecht. <i>Prognostics and health management based qualification</i>
11:30 – 11:55	Chien-Yu Peng and Sheng-Tsaing Tseng. <i>Lifetime inference of skew-Wiener linear degradation models</i>
11:55 – 12:20	Chang-Su Woo, Hyun-Sung Park, Byung-Ik Choi, Young-Gil Kim, Wae-Gi Shin. <i>Fatigue lifetime prediction and reliability evaluation of automotive rubber component</i>

<b>Room 4 (AM101) Topic: Manufacturing Systems Reliability</b>		<b>Chair: Stefanka Chukova</b>
11:05 – 11:30 <b>PRESENTATION CANCELLED</b>	Ji Hwan Cha and Maxim Finkelstein. <i>Optimal burn in for systems operating under environmental shocks</i> <b>NB: no other time changes in this session.</b>	
11:30 – 11:55	Simon Anastasiadis, Richard Arnold, Stefanka Chukova and Yu Hayakawa. <i>Failures in multicomponent systems with damage accumulation</i>	
11:55 – 12:20	Jeh-Nan Pan. <i>A multivariate loss function-based method for evaluating quality and reliability improvements</i>	
<b>Room 5 (AM104) Topic: Dependability Modeling/ Software Reliability and Testing</b>		<b>Chair: Hiroyuki Okamura</b>
11:05 – 11:30	Xiao-Yue Wu, Gang Wang and Li-Chang Lu. <i>An approach to mission reliability analysis of spaceflight TT&amp;C system</i>	
11:30 – 11:55	Shuang-Wei Xu, Xiao-Yue Wu and Wei-Wei Wang. <i>Mission reliability modeling &amp; simulation of TT&amp;C system using ExSpect</i>	
11:55 – 12:20	Tadashi Dohi, Hiroyuki Okamura and Kishor Trivedi. <i>Comparing software cost rate models with rejuvenation</i>	
<b>Lunch 12:20 – 1:55 (Mercure Hotel)</b>		
<b>Estate Khmaladze, <i>Towards martingale theory for multi-dimensional survival/warranty analysis</i></b> <b>Chair: Tadashi Dohi</b> <b>Plenary talk 1:55 – 2:45 (CO122)</b>		
<b>Room 1 (CO122) Topic: Maintenance Modeling</b>		<b>Chair: Wenbin Wang</b>
2:50 – 3:15	Chun-Yuan Cheng, Renkuan Guo, Mingchih Chen and Jr-Tzung Chen. <i>A modified preventive maintenance model with failure rate reduction in a finite time span</i>	
3:15 – 3:40	Satoshi Mizutani and Toshio Nakagawa. <i>Optimal maintenance policy with an interval of duplex system</i>	
3:40 – 4:05	Tetsushi Yuge, Nobuyuki Tamura and Shigeru Yanagi. <i>Repairable fault tree analysis based on renewal process</i>	
<b>Room 2 (CO118) Topic: Networking Special session organized by Harry Perros</b>		<b>Chair: Ulf Korner</b>
2:50 – 3:15	Ulf Korner, Michal Pioro, Christian Nyberg and Ali Hamidian. <i>Routing and QoS in mesh networks – dynamic and static algorithms</i>	
3:15 – 3:40	Brian Bouterse and Harry Perros. <i>On the response time of a SOLR search engine in a virtualized environment</i>	
3:40 – 4:05	Youghourta Benfattoum, Steven Martin, Ignacy Gawędzki and Khaldoun Al Agha. <i>I2ASWP: MANET routing considering intra-flow interference</i>	

<b>Room 3 (CO119) Topic: Warranty Modeling</b>		<b>Chair: Nat Jack</b>
2:50 – 3:15	Bermawi P. Iskandar, Nat Jack and D.N.P Murthy. <i>Two new servicing strategies for products sold with one-dimensional warranties</i>	
3:15 – 3:40	Alexander Baumeister. <i>Copula based simulation of warranty costs: The case of multidimensional limitations and availability-driven penalty payments</i>	
3:40 – 4:05	Sima Varnosafaderani and Stefanka Chukova. <i>2D warranty: An imperfect repair strategy</i>	
<b>Room 4 (AM101) Topic: Manufacturing Systems Reliability</b>		<b>Chair: Hideo Nakamura</b>
2:50 – 3:15	Yujuan Xie, Min Xie and Thong-Ngee Goh. <i>A MEWMA chart for the transformed bivariate exponential data</i>	
3:15 – 3:40	Kazumi Sakamaki, Yasuaki Kaneda, Yasuharu Irizuki, Masanobu Yamazaki, Kazuhiko Horigome, Hideo Nakamura, Masaya Ohta, Hiroshi Mochizuki. <i>Design of dependable data logger for inline production management</i>	
3:40 – 4:05	Shin-Li Lu and Wen-Chih Chiu. <i>Economic-statistical design of GWMA control chart for autocorrelated processes</i>	
<b>Room 5 (AM104) Topic: Computer Systems Reliability</b>		<b>Chair: Koichi Tokuno</b>
2:50 – 3:15	Kishor Trivedi and Kesari Mishra. <i>A non-obtrusive method for uncertainty propagation in analytic dependability models</i>	
3:15 – 3:40	Koichi Tokuno and Shigeru Yamada. <i>Markovian service availability modeling for hardware/software system</i>	
3:40 – 4:05	Tadashi Dohi, Hiroyuki Okamura and Shunji Osaki. <i>Transient analysis of software availability models with rejuvenation</i>	
<b>Afternoon Tea/Coffee Break 4:05 – 4:30 (AM102)</b>		
<b>Room 1 (CO122) Topic: Maintenance Modeling</b>		<b>Chair: Jae-Hak Lim</b>
4:30 – 4:55	Jonghan Kim and Sanghyuck Park. <i>Integration of diagnosis and prognosis models for facility reliability evaluation</i>	
4:55 – 5:20	Tahmina Lipi, Jae-Hak Lim and Ming Zuo. <i>Age replacement policy based on condition information</i>	
5:20 – 5:45	Jouko Laitinen and Per-Erik Hagmark. <i>Modeling of closed spare part circulation for better availability of aircraft</i>	
<b>Room 2 (CO118) Topic: Networking</b>		<b>Chair: Guy Pujolle</b>
<b>Special session organized by Harry Perros</b>		
4:30 – 4:55	Guy Pujolle. <i>Network, and cloud virtualization: A new solution for network reliability</i>	
4:55 – 5:20	Lina Battestilli and Harry Perros. <i>Performance evaluation of an OBS network as a tandem network of IPP/M/W/W nodes</i>	
5:20 – 5:45	Hiroyuki Okamura, Tadashi Dohi and Kishor Trivedi. <i>An improvement of EM algorithm for PH distributions with group data</i>	

<b>Room 3 (CO119) Topic: Fault-Tolerance Computing</b>		<b>Chair: Satoshi Fukumoto</b>
4:30 – 4:55	Kenta Yamana, Hiroyuki Okamura and Tadashi Dohi. <i>A note on quasi-Monte Carlo simulation for non-homogeneous Markov chains</i>	
4:55 – 5:20	Mitsutaka Kimura, Mitsuhiro Imaizumi and Toshio Nakagawa. <i>Optimal replication interval of an asynchronous replication using journaling files</i>	
5:20 – 5:45	Mamoru Ohara, Satoshi Fukumoto and Masayuki Arai. <i>Optimal checkpoint density for hybrid state saving</i>	
<b>Room 4 (AM101) Topic: Safety and Risk Assessment</b>		<b>Chair: Tetsushi Yuge</b>
4:30 – 4:55	Taijiro Yoneda, Tetsushi Yuge, Nobuyuki Tamura and Shigeru Yanagi. <i>Minimal cut sequences and top event probability of dynamic fault trees</i>	
4:55 – 5:20	Chi-Shiang Cho, Shih-Yao Dai, Wei-Ho Chung and Sy-Yen Kuo. <i>Probabilistic evaluations of event-tree and fault-tree in safety-critical systems</i>	
5:20 – 5:45	Kuo-Hsiung Wang and Yu-Chiang Fang. <i>Comparison of availability between two systems with warm standby units and different imperfect coverage</i>	
<b>Room 5 (AM104) Topic: Computer Systems Reliability</b>		<b>Chair: Toshio Nakagawa</b>
4:30 – 4:55	Sayori Maeji, Kenichiro Naruse and Toshio Nakagawa. <i>Optimal checking models with random working times</i>	
4:55 – 5:20	Xufeng Zhao, Toshio Nakagawa and Syouji Nakamura. <i>Studies on optimal collection time for a generational garbage collector</i>	
5:20 – 5:45	Mitsuhiro Imaizumi and Mitsutaka Kimura. <i>Optimal management policy for executable contents</i>	

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<b>Day 2: Friday 3 December 2010</b>	
<b>PLENARY PRESENTATION CANCELLED – REPLACED BY CONFERENCE MIXER, AS BELOW</b>	
<b>Pra Murthy, <i>New research in reliability, warranty and maintenance</i></b>	
<b>Chair: Stefanka Chukova</b>	
<b>Plenary talk 9:10 – 10:00 (CO122)</b>	
<b>Conference Mixer including Refreshments 9:10 – 10:25 (AM102)</b>	
<b>Room 1 (CO122) Topic: Maintenance Modeling</b>	
<b>Chair: Shunji Osaki</b>	
10:30 – 10:55	Jianmin Zhao and Quan Shi. <i>A condition-based inspection model for a deteriorating system</i>
10:55 – 11:20	Nobuyuki Tamura, Tetsushi Yuge and Shigeru Yanagi. <i>Sufficient conditions for the monotone properties of a POMDP model with uncertain repair</i>
11:20 – 11:45	Hiroyuki Okamura, Tadashi Dohi and Shunji Osaki. <i>A dynamic programming approach for sequential preventive maintenance policies</i>
11:45 – 12:10	Renkuan Guo, Yanhong Cui and Danni Guo. <i>Credibilistic statistical prediction</i>
<b>Room 2 (CO118) Topic: Network Reliability and Optimization</b>	
<b>Chair: Peter Thomson</b>	
10:30 – 10:55	Shin-Guang Chen. <i>Optimal device planning and performance evaluation in AMS</i>
10:55 – 11:20	Peter Thomson and David Harte. <i>Towards a robust statistical framework for the assessment of quality of supply by New Zealand electricity networks</i>
11:20 – 11:45	Alan Lee and Ilze Ziedins. <i>Resource allocation to maximize run-out times</i>
11:45 – 12:10	Junji Koyanagi and Hajime Kawai. <i>An optimal deferment time for a special customer in a discrete time queueing system</i>
<b>Room 3 (CO119) Topic: Estimation and Statistical Tests</b>	
<b>Chair: Mohamed Ghitany</b>	
10:30 – 10:55	Dilay Çelebi, Geert-Jan van Houtum and Alaa M.H. Elwany. <i>Effective heuristics for delay time modeling</i>
10:55 – 11:20	Renkuan Guo, Charles Love and Yanhong Cui. <i>Maximum likelihood estimation of 2-parameter wave-like lifetime distributions</i>
11:20 – 11:45	Estate Khmaladze and Leigh Roberts. <i>On the TTT-transformation, innovation martingales and testing exponentiality</i>
11:45 – 12:10	Mohamed Ghitany. <i>Estimation of reliability from a bivariate log-normal data</i>

<b>Room 4 (AM101) Topic: Applied Statistics and Reliability Analysis</b> <b>Chair: Suk Joo Bae</b> <b>Special session organized by Hisashi Yamamoto, Suk Joo Bae, Jau-Chuan Ke</b>	
10:30 – 10:55	Tomotaka Ishii, Tadashi Dohi and Hiroyuki Okamura. <i>Applying least squares estimation to software reliability prediction</i>
10:55 – 11:20	Kwon Hyun Byun and Suk Joo Bae. <i>A control chart for cluster index to monitor clustered defects in semiconductor manufacturing process</i>
11:20 – 11:45	Jau-Chuan Ke and Yu-Hung Chien. <i>Multi-server machine repair problems with multi-threshold synchronous vacations</i>
11:45 – 12:10	Megumi Uchino, Hideki Nagatsuka and Hisashi Yamamoto. <i>A study of parameter estimation of distributions based on multivariate data under order restrictions of the parameters</i>
<b>Room 5 (AM104) Topic: Maintenance Optimisation</b> <b>Chair: Shey-Huei Sheu</b>	
10:30 – 10:55	You-Tern Tsai, Kuo-Shong Wang and Yung-Yuan Hsu. <i>A study of diagnosis planning and testability evaluation for a system</i>
10:55 – 11:20	Shey-Huei Sheu, Chin-Chih Chang and Yu-Hung Chien. <i>Optimal age-replacement time with minimal repair based on cumulative repair-cost limit for a system subjected to shocks</i>
11:20 – 11:45	Wenbin Wang. <i>An inspection model with non-zero failure downtime</i>
11:45 – 12:10	Xufeng Zhao, Toshio Nakagawa and Kazunori Iwata. <i>Optimal maintenance policies for cumulative damage models with random working times</i>
<b>Lunch 12:10 – 1:40 (Mercure Hotel)</b>	
<b>Helena Szczerbicka, <i>Advances in AIS for self-maintenance of wireless sensor networks</i></b> <b>Chair: Harry Perros</b> <b>Plenary talk 1:40 – 2:30 (CO122)</b>	
<b>Afternoon Tea/Coffee Break 2:30 – 3:00 (AM102)</b>	
<b>Room 1 (CO122) Topic: Maintenance/Warranty Modeling</b> <b>Chair: Bibhas Giri</b>	
3:05 – 3:30	Yu-Hung Chien and Fu-Min Chang. <i>Optimal discrete-time periodic replacement policy for repairable products under free repair warranty</i>
3:30 – 3:55	Ki Mun Jung and Dong Ho Park. <i>Optimal maintenance strategy for non-renewing replacement-repair warranty</i>
3:55 – 4:20	Won-Young Yun, Young-Jin Han and Dong-Hwi Kim. <i>A repair and replacement policy for systems with warranty period</i>
4:20 – 4:45	Tadashi Dohi, Naoto Kaio and Shunji Osaki. <i>A stochastic profit model under repair-limit replacement program with imperfect repair</i>
4:45 – 5:10	Rudrani Banerjee and Manish Bhattacharjee. <i>Warranty servicing with a Brown-Proshan repair option</i>

<b>Room 2 (CO118) Topic: Network Reliability and Optimization</b>		<b>Chair: Yi-Kuei Lin</b>
3:05 – 3:30	Yi-Kuei Lin and Ping-Chen Chang. <i>Service reliability of a cloud computing network subject to maintenance budget</i>	
3:30 – 3:55	Yi-Kuei Lin and Ping-Chen Chang. <i>Estimated maintenance reliability for a cloud computing system</i>	
3:55 – 4:20	Ming-Li Yu and Li-Rong Cui. <i>A study on optimal availability for a two-stage directed network of Markov repairable systems</i>	
4:20 – 4:45	Shunji Osaki and Masabumi Suzaki. <i>A simple approximation formulae for reliability functions</i>	
4:45 – 5:10	Narubordee Sarnsuwan, Naruemon Wattanapongsakorn and Chalernpol Charnsripinyo. <i>Real-time internet worm detection using feature extraction and data mining approaches</i>	
<b>Room 3 (CO119) Topic: Estimation and Statistical Tests</b>		<b>Chair: Dhaif K. Al-Mutairi</b>
3:05 – 3:30	Dhaif K. Al-Mutairi. <i>A bivariate weighted exponential model and its application to reliability</i>	
3:30 – 3:55	Jae-Hak Lim. <i>New classes of life distributions representing old age characteristic and their application</i>	
3:55 – 4:20	Hideki Nagatsuka and Narayanaswamy Balakrishnan. <i>On estimation for the three-parameter Weibull distribution using statistics invariant to unknown location</i>	
4:20 – 4:45 <b>PRESENTATION CANCELLED</b>	<del>Xian Zhao, Li-Rong Cui and Wei-Juan Xie. <i>On parallel start-up demonstration test</i></del> <b>NB: no other time changes in this session.</b>	
4:45 – 5:10	Chang Keun Lim, Jung Won Park and Kang Dong Kim. <i>Method of measuring discoloration of leadframe and relationship with surface condition including reflection</i>	
<b>Room 4 (AM101) Topic: Applied Statistics and Reliability Analysis</b>		<b>Chair: Jau-Chuan Ke</b>
<b>Special session organized by Hisashi Yamamoto, Suk Joo Bae, Jau-Chuan Ke</b>		
3:05 – 3:30	Koji Shingyochi, Hisashi Yamamoto and Hidemi Yamachi. <i>Comparative study of simulated annealing algorithms for optimal arrangement problems in a circular consecutive-k-out-of-n: F system</i>	
3:30 – 3:55	Tomoaki Akiba, Danqin Liu, Hisashi Yamamoto, Hideki Nagatsuka and Mitsuyuki Kawakami. <i>A fast algorithm for the partial group of Pareto-solutions at a multi-objective network</i>	
3:55 – 4:20	Tomonori Komuro, Hisashi Yamamoto, Tomoaki Akiba and Hideki Nagatsuka. <i>A trend on the optimal arrangements in a multi-state consecutive-k-out-of-n: F system</i>	
4:20 – 4:45	Hidemi Yamachi, Tomonori Komuro, Koji Shingyochi and Hisashi Yamamoto. <i>An application of evolutionary algorithm for optimal arrangement problems of multi-state consecutive-k-out-of-n: F system</i>	
4:45 – 5:10	Suk Joo Bae and Tao Yuan. <i>Reliability prediction using Bayesian change-point approaches</i>	

<b>Room 5 (AM104) Topic: Survival Analysis</b>		<b>Chair: Mark Bebbington</b>
3:05 – 3:30	Renyan Jiang. <i>Aging change point of the gamma life distribution</i>	
3:30 – 3:55	Mark Bebbington, Chin-Diew Lai, Morgan Wellington and Ricardas Zitikis. <i>Discrete bathtub distributions: Mind the step function!</i>	
3:55 – 4:20 PRESENTATION CANCELLED	<del>Renkuan Guo, Yanhong Cui, Tim Dunne and Danni Guo. <i>The theoretical shell for the uncertainty decision analysis</i></del> NB: this session now finishes at 3.55pm.	
4:20 – 4:45 PRESENTATION CANCELLED	<del>Renkuan Guo, Yanhong Cui and Danni Guo. <i>Reliability concept under an uncertainty environment</i></del> NB: this session now finishes at 3. 55pm.	
4:45 – 5:10 PRESENTATION CANCELLED	<del>Renkuan Guo, Yanhong Cui, Charles Love and Chun Yuan Cheng. <i>Lifetime with wave like distribution</i></del> NB: this session now finishes at 3. 55pm.	
<b>Conference Banquet 6:30 – 11:00 James Cook Restaurant</b>		

## Major Changes: Now Only TWO Sessions on Day 3

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Day 3: Saturday 4 December 2010	
<b>Room 1 (CO122) Topic: Network Reliability and Optimization</b>	
<b>Chair: Won-Young Yun</b>	
9:30 – 9:55	Bibhas Giri. <i>Delay-time model for determining optimal inspection schedule, production run and process mean under a mixed quality loss function</i>
9:55 – 10:20	Won-Young Yun, Hee-Wook Kim and Jong-Woon Kim. <i>A RAM design of multi-functional system</i>
10:20 – 10:45	Ngapuli Sinisuka and Herry Nugraha. <i>Life cycle cost analysis on the operation of coal fired power plant unit #1 330 MW Indramayu, West Java, Indonesia</i>
<b>Room 2 (CO119) Topic: Software Reliability and Testing</b>	
<b>Chair: John Haywood</b>	
9:30 – 9:55	No presentation at this time in this session
9:55 – 10:20	Xiang Li, Min Xie and Szu Hui Ng. <i>Optimal release time determination with a decision model based on multi-attribute utility theory</i>
10:20 – 10:45	Yoshinobu Tamura, Toru Nakamichi, Yuki Yoshida and Shigeru Yamada. <i>Reliability/portability assessment tool considering optimal release problem for an embedded open source software</i>
<b>Morning Tea/Coffee Break 10:45 – 11:15 (AM102)</b>	
<b>APARM 2010 Closing 11:15 – 11:35 (CO122)</b>	
<b>Lunch 11:35 – 12:30 (AM102)</b>	
<b>Conference Tour 12:30 – 10:00pm</b>	