Poster Session

Wednesday, June 5, 2019

W1 **Technical Justification for an Ultrasonic Inspection Procedure Applied to a Helicopter Component**
Muzibur Khan
Aerospace Research Centre, National Research Council Canada, Ottawa, Canada

W2 **Rapid Calculation of Safe Acceleration Values for Aircraft Structures under Flight Test**
Stephen Dosman[1], Jonathan Gorman[2]
[1]AV8R Consulting, Cambridge, UK
[2]Marshall Aerospace & Defence Group, Cambridge, UK

W3 **Widespread Fatigue Damage Evaluation for Multiple Elements based on Probabilistic Approach**
Fabiano Hernandes
ANAC – Brazilian Civil Aviation Authority, São José dos Campos, Brazil

W4 **Conception of Modular Test Stand for Fatigue Testing of Aeronautical Structures**
Andrzej Leski, Wojciech Wronic, Piotr Kowalczyk, Michał Szmidt
Institute of Aviation, Warsaw, Poland

W5 **Why Should We Encourage Usage of Interference-Fit Fasteners at Airframe Structural Joints?**
Carmel Matias, Ekaterina Katsav
Israel Aerospace Industries (IAI), Ben-Gurion International Airport, Israel

W6 **Delamination Onset in Composite Materials due to Fatigue Loading**
Luisa Boni[1], Daniele Fanteria[1], Luigi Lazzeri[1], Ugo Mariani[2], Marco Rigamonti[2]
[1]University of Pisa, Pisa, Italy
[2]Leonardo Helicopter Division, Cascina Costa (VA), Italy

W7 **Reliability Approach Applied on Fatigue Safety Factors for Fleet Monitoring**
Vincent Montlahuc
DGA Aeronautical Systems, Balma, France

W8 **Study of Composite Impact Dent Visual Detectability and Damage Relaxation Phenomena**

Stanislav Dubinskii[1], Vitaliy Senik[1], Yuri Feygenbaum[2]
[1]*The Central Aerohydrodynamic Institute named after N.E. Zhukovsky (TsAGI), Zhukovsky, Russia*
[2]*The State Scientific Research Institute of Civil Aviation, Moscow, Russia*

W9 **Effect of Plate Thickness and Paint on Lightning Strike Damage of Aluminum Alloy Sheet**

Takao Okada, Hiromitsu Miyaki, Yoshiyasu Hirano
Aeronautical Technology Directorate, Japan Aerospace Exploration Agency, Tokyo, Japan

W10 **Embedded Structural Health Monitoring with Additive Manufacturing: Post Processes to Improve Fatigue Properties**

Michaël Hinderdael, Dieter De Baere, Patrick Guillaume
Vrije Universiteit Brussel, Department of Mechanical Engineering, Brussels, Belgium

W11 **Effective Durability and Damage Tolerance Training: New Methods for Modern Learners**

Brandon D. Chapman
Structural Damage Technology, Boeing Commercial Airplanes, Everett, WA, USA

W12 **Fatigue Life Simulation and Experiment of 2024 Aluminum Joints with Multi-fasteners Interference-fit**

Qingyun Zhao[1],Yunliang Wang[2], Hong Huang[3],
Sirui Cheng[3], Fenglei Liu[3]
[1]*AVIC Manufacturing Technology Institute, Beijing, China*
[2]*Naval Aeronautical and Astronatical University, Shandong, China*
[3]*AVIC Manufacturing Technology Institute, Beijing, China*

W13 **Application of RLC Filters and Analog Circuits for Increasing Information Bandwidth of Channels of Data Acquisition Units**

Kamil Kowalczyk, Michal Dziendzikowski, Artur Kurnyta, Patryk Niedbala, Krzysztof Dragan
Air Force Institute of Technology, Warszawa, Poland

W14 **PZL M28 Airplane Service Life Extension Activities**

Janusz Pietruszka[1], Mariusz Kubryn[1], Henryk Gruszecki[1], Leszek Pieróg[1], Józef Brzęczek[2]
[1]Polskie Zakłady Lotnicze, Mielec, Poland
[2]Politechnika Rzeszowska, Rzeszów, Poland

W15 **Mechanistic Understanding of Stability of Residual Stresses in Aerospace Alloys with Crystallographic Texture**

Muhammad Kashif Khan, Sunil Anandatheertha, Michael Fitzpatrick, Xiang Zhang
Institute of Future Transport and Cities, Coventry University, Coventry, UK

W16 **Strength Tests of Ceramic Heat-protective Coatings for Hot Parts of GTE**

Bychkov N.G., Nozhnitsky Yu.A., Avrutsky V.V., Pershin A.V., Khamidullin A.Sh. P.I.
Baranov Central Institute of Aviation Motors (CIAM), Russia

W17 **Discrete Damage Modeling of Composite Strength After Impact**

Mark Flores[1], David Mollenhauer[1], Eric Lindgren[1], Eric Zhou[2], Daniel Rapking[2],
[1]Air Force Research Laboratory, WPAFB, USA
[2]University of Dayton Research Institute, OH, USA

Poster Session

Thursday, June 6, 2019

T1 **Effect of Alternative Paint Stripping Processes on the Fatigue Performance of Aluminium Alloys - Atmospheric Plasma De-painting**
Ali Merati, Marko Yanishevsky, Yan Bombardier
Aerospace Research Centre National Research Council Canada

T2 **Examination of the KAWAI CLD Method for Fatigue Life Prediction of Composites**
Buimovich Y., Elmalich D.
Israel Aerospace Industries, Ben-Gurion International Airport, Israel

T3 **Fatigue Life Prediction of CFRP Laminate under Quasi-Random Loading**
Vitaly E. Strizhius
Fatigue Strength Department, JSC "AeroComposite", Moscow, Russia

T4 **The Influence of Low and High-cycle Fatigue on Dislocations Density and Residual Stresses in Inconel 718**
Elżbieta Gadalińska, Maciej Malicki, Bartosz Madejski, Grzegorz Socha
Institute of Aviation, Warszawa, Poland

T5 **Analysis of Adhesive Disbond Occurrences in Rotor Blades of Mi-2 Helicopters**
Piotr Synaszko, Krzysztof Dragan, Michał Sałaciński, Mirosław Wrona
Air Force Institute of Technology, Warszawa, Poland

T6 **Summary of Recent Round Robin Life Prediction Efforts for Crack Shape and Residual Stress Effects**
Alexander V. Litvinov, James A. Harter[1], Robert Pilarczyk[2]
[1]*LexTech, Inc., Centerville, OH, USA*
[2]*Hill Engineering LLC, Rancho Cordova, CA, USA*

T7 **Effect of Strengthened Hole on the Fatigue Life of 2024-T3 Aluminum Alloy**

Hong Huang, Qingyun Zhao, Fenglei Liu
AVIC Manufacturing Technical Institute, Beijing, China

T8 **Study of Load Spectrum Occurring in the Course of Photogrammetric Missions of the UAV**

Miroslaw Rodzewicz, Dominik Glowacki
Warsaw University of Technology, Warsaw, Poland

T9 **Research on the Airworthiness Compliance Strategy of Composite Structure**

Li Weiping[1,2], Zheng Xiaoling[2]
[1]*Nanjing University of Aeronautics and Astronautics, Nanjing, China*
[2]*Shanghai Aircraft Design and Research Institute, Shanghai, China*

T10 **Influence of Bonded Crack Retarders on Damage Tolerance Performance of Fuselage Panel**

Haiying Zhang, Dengke Dong, Yulong Wei, Weifeng Zang, Wenwei Yan
Aircraft Strength Research Institute, Xi'an, China

T11 **Very High-Cycle Fatigue Characteristics of Cross-Ply CFRP Laminates in Transverse Crack Initiation**

Atsushi Hosoi[1,2,3], Takuro Suzuki[4], Kensuke Kosugi[4], Takeru Atsumi[4], Yoshinobu Shimamura[5], Terumasa Tsuda[6], Hiroyuki Kawada[1,2,3]
[1]*Department of Applied Mechanics and Aerospace Engineering, Waseda University, Tokyo, Japan*
[2]*Department of Materials Science, Waseda University, Tokyo, Japan*
[3]*Kagami Memorial Research Institute for Materials Science and Technology, Waseda University, Tokyo, Japan*
[4]*Department of Applied Mechanics, Waseda University, Tokyo, Japan*
[5]*Department of Mechanical Engineering, Shizuoka University, Sizuoka, Japan*
[6]*Composite Materials Research Laboratories, Toray Industries, Inc., Ehime, Japan*

T12 **Numerical Investigations on the Three-dimensional/II Mixed-mode Elasto-plastic Fracture for Through-thickness Cracked Bodies**

Wang Fang-li[2,1], Tong Ming-bo[1], Bai Shu-wei[1], Jiang Nan[1], She Chong-min[1], Fan Jun-ling[3]
[1]Nanjing University of Aeronautics & Astronautics, China
[2]Jinling Iinstitute of Technology, Nanjing, China
[3]AVIC Aircraft Strength Research Institute, China

T13 **Study of Cracks Behavior in Riveted Joint Subjected to Fatigue Cycles with Acoustic Emission Approximate Entropy**

S. Kalyana Sundaram[1], M.R. Bhat[2]
[1]Structural Technologies Division, CSIR-National Aerospace Laboratories, Bangalore, India
[2]Department of Aerospace Engineering, Indian Institute of Science, Bangalore, India

T14 **The Optimization and Design of Complicated-Surface Panel Based on Automate Fiber Placement**

Liyang Liu, Hao Cui
Shenyang Aircraft Design and Research Institute of Aviation Industry of China, China

T15 **Development of an Innovative Repair System for Metallic Aircraft Structures using a Novel Shape Memory Alloy**

Wandong, Wang[1,2], Calvin Rans[2], Elyas Ghafoori[1]
[1]Empa, Swiss Federal Laboratories for Materials Science and Technology, Dübendorf, Switzerland
[2]Faculty of Aerospace Engineering, Delft University of Technology, The Netherlands

T16 **Study on the Effects of Vibration Loads on Thermal Fatigue Durability of Materials**

Bychkov N.G., Nozhnitsky Yu.A., Avrutsky V.V., Pershin A.V., Khamidullin A.Sh. P.I.
Baranov Central Institute of Aviation Motors, Russia

T17 **Meso-scale Peridynamic Simulation of Crack Deflections in Heterogeneous Material under Thermomechanical Environment**

Y.L. Hu, Yin Yu, Xiaojing Zhang
School of Aeronautics and Astronautics, Shanghai Jiao Tong University, Shanghai, China

Poster Session

Friday, June 7, 2019

F1 **An Engineering Calculation Method of Probability Distribution of Crack Initiation Life for Widespread Fatigue Damage**

Xi Wei, Li Qiang, Shen Peiliang, Yang Gang, Huang Fu, Zhao Jianjun
Airframe Integration Department, Shanghai Aircraft Design and Research Institute, Shanghai, China

F2 **Comparison of Rivet Hole Expansion for Protruding Rivets; Universal and with Compensator**

Wojciech Wronicz
Institute of Aviation, Warsaw, Poland

F3 **Approach to Evaluation of Delamination on the MiG-29's Vertical Stabilizers Composite Skin**

Michał Sałaciński, Piotr Synaszko, Dawid Olesiński, Piotr Samoraj
Air Force Institute of Technology, Warszawa, Poland

F4 **Damage Mechanisms and Mechanical Properties of Directly Bonded CFRTP and Aluminum with Nano-structured Surface**

Kristine Munk Jespersen [1,2], Hikaru Abe[2], Hiroki Ota[2], Kei Saito[2], Keita Wada[2], Atsushi Hosoi[2,3], Hiroyuki Kawada[2,3]
[1]*Kanagawa Institute of Industrial Science and Technology, Kanagawa, Japan*
[2]*Waseda University, Tokyo, Japan*
[3]*Kagami Memorial Research Institute for Materials Science and Technology, Tokyo, Japan*

F5 **A Modeling Approach for the Fatigue Behavior of Laser Drilled Micro Perforated Structural Panels**

Dort Daandels[1] Stefan Riekehr[2], Nikolai Kashaev[2], Jon Mardaras[3], Sammy Zein El Dine[1], Christian Heck[1]
[1]*Airbus Operations GmbH, Bremen, Germany*
[2]*Institute of Materials Research, Materials Mechanics, Helmholtz-Zentrum Geesthacht, Geesthacht, Germany*
[3]*Airbus S.A.S, Toulouse, France*

F6 **Modernizing the A-10 Loading Spectrum Development Process**

Smith, Luciano[1], Mark Thomsen[2], Devin Butts[3], Kurt Schrader[3]
[1]*Southwest Research Institute, San Antonio, TX, USA*
[2]*A-10 Structures/Aero Section, United States Air Force, Hill AFB, UT, USA*
[3]*InterPro, LLC, Floresville, TX, USA*

F7 **Fatigue Crack Propagation Influenced by Laser Shock Peening Introduced Residual Stress Fields in Aluminum Specimens**

Sören Keller[1], Manfred Horstmann[1], Nikolai Kashaev[1], Benjamin Klusemann[1,2]
[1]*Institute of Materials Research, Materials Mechanics, Helmholtz-Zentrum Geesthacht, Geesthacht, Germany*
[2]*Institute of Product and Process Innovation, Leuphana University of Lüneburg, Lüneburg, Germany*

F8 **Multiaxial Fatigue Behavior of 30HGSA Steel under Cyclic Tension-Compression and Reversed Torsion**

Daniel Dębski[1], Krzysztof Gołoś[1,2], Marek Dębski, Andrzej Misztela[2]
[1]*Warsaw University of Technology, Warsaw, Poland*
[2]*Institute of Mechanized Construction and Rock Mining, Warsaw, Poland*

F9 **Influence of Heat Treatment on Near-threshold Fatigue Crack Growth Behavior of High Strength Aluminum Alloy 7010**

Nandana M S[1], Udaya Bhat K[1], Manjunatha C M[2]
[1]*National Institute of Technology Karnataka, Mangalore, India*
[2]*CSIR-National Aerospace Laboratories, Bangalore, India*

F10 **Development of Efficient High-fidelity Solutions for Virtual Fatigue Testing**

Javier Gomez-Escalonilla, Diego Garijo, Oscar Valencia, Ismael Rivero
Airbus, Military Aircraft, Madrid, Spain

F11 **Lightning Strike Damage of CF/epoxy Composite Laminates with Conductive Polymer Layers**

Tomohiro Yokozeki[1], Vipin Kumar[2], Yu Zhou[3], Takao Okada[4], Teruya Goto[5], Tatsuhiro Takahashi[6]
[1]Department of Aeronautics and Astronautics, The University of Tokyo, Tokyo, Japan
[2]E Manufacturing Demonstration Facility (MDF), Oak Ridge National Laboratory (ORNL), Knoxville, TN, USA;
[3]Department of Aeronautics and Astronautics, The University of Tokyo, Tokyo, Japan
[4]Japan Aerospace Exploration Agency, Tokyo, Japan
[5]Department of Mechanical Systems Engineering, Tokyo University of Agriculture and Technology, Tokyo, Japan
[6]Department of Mechanical Systems Engineering, Tokyo University of Agriculture and Technology, Tokyo, Japan

F12 **Interaction between High- and Low-cycle Thermo-mechanical Fatigue Crack Propagation around Cooling Hole in A Ni-Based Superalloy**

Masakazu Okazaki, Yuuki Yonaguni
Nagaoka University of Technology, Niigata, Japan

F13 **Fatigue Damage Evaluation in Ceramic Matrix Composite Materials for Aerospace Structural Applications**

S Kalyana Sundaram[1], Aparna Aradhye[1], S Kshama[1], K Panbarasu[1], A Udayakumar[2],
[1]Structural Technologies Division, CSIR-National Aerospace Laboratories, Bangalore, India
[2]Materials Science Division, CSIR-National Aerospace Laboratories, Bangalore, India

F14 **Research on Engineering Analysis Method of Post-buckling Fatigue of Fuselage Panels**

Li Xiaopeng, ZhangYanjun, ZhuLiang, YangWeiping
The First Aircraft Institute of AVIC, Xi'an, China

F15 **Real-time Monitoring of a Full-scale Fatigue Test**

Anne-Cécile Marel, Bastien Bayart
DGA Aeronautical Systems, Toulouse, France

F16 **Tensile Test of Ti/CFRP Scarf Joint with One Stringer**

Hikaru Hoshi, Sunao Sugimoto, Yutaka Iwahori, Toshiya Nakamura, Takao Okada
Japan Aerospace Exploration Agency, Japan